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## Duckham's Patent Hydrostatic Weighing Machines.

A MACHINE which takes articles as they come, and weighs them without special handling is one of the greatest conveniences that can be put in a shop. In a great many situations, the weighing of heavy articles is next to an impossibility, as at railroad depots, where there are the scales necessary for very heavy articles nor the time to spare for moving them about from wagon to platform and thence to the car. In such cases, the Hydrostatic Weighing Machine, which is illustrated in the accompanying cut, is invaluable. It forms one of the links in the hoisting chain, or an appendage to the pulley, and is entirely out of the way. Whether the weight is desired or not, the machine requires no adjustment. It carries the result on its face and does its work without further attention.

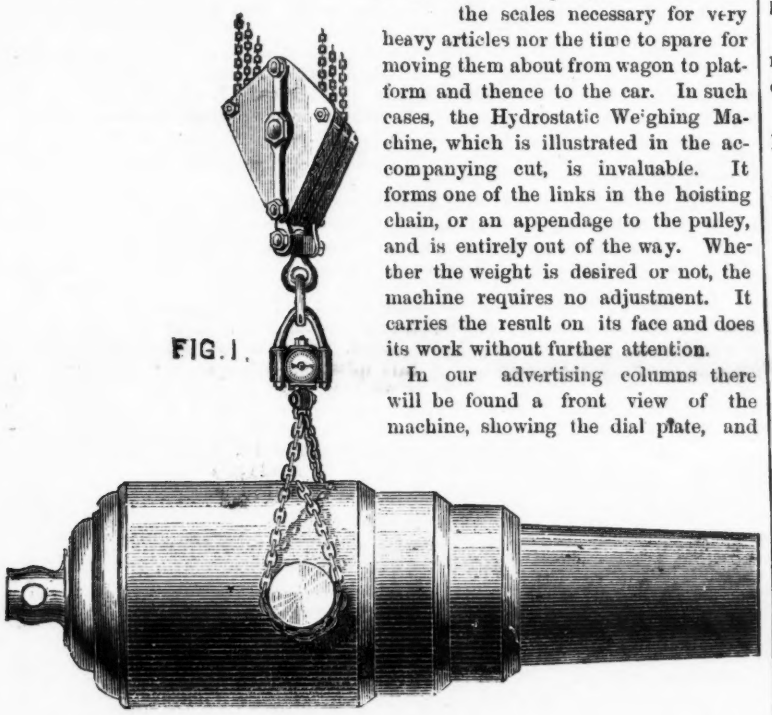
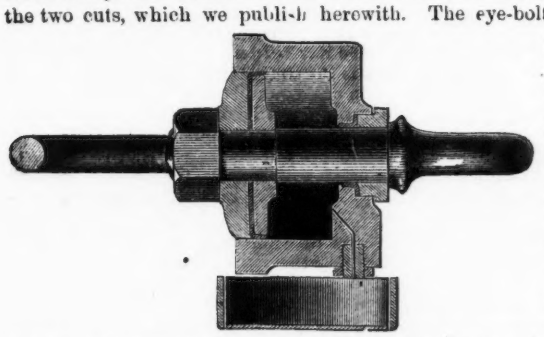


FIG. 1.

In our advertising columns there will be found a front view of the machine, showing the dial plate, and also giving a general idea of the structure, which is that of an eye-bolt fastened in a yoke. The inner construction will be understood from the smaller of the two cuts, which we publish herewith. The eye-bolt hangs from a small piston, which plies in an accurately bored chamber filled with oil. This chamber forms the chord of the before-mentioned yoke. From the chamber a minute channel leads to the dial.



The machine therefore consists of a cup of oil suspended by a yoke, say to the pulley of a derrick. On this oil rests the tightly-fitting piston which carries the eye-bolt, and to the latter the article to be weighed is slung. The pressure produced by the weight forces a certain amount of oil into the registering apparatus and thereby moves the pointer round the dial, the weight being at once read off.

This construction admits of a large range of power and delicacy. Small machines weigh with accuracy, and the large ones handle the heaviest loads with great ease. Messrs. THOMAS PROSSER & SONS, 15 Gold street, New York, who are the American agents for this useful machine, publish a long list of mines, railroads, shipbuilders, and other manufacturers who have them in use. At the last exhibition of the American Institute, some of these machines were tested by the School of Mines testing machine, and the divisions thus marked off were remarkably regular. The larger of the two cuts on this page shows the mode of attachment and the ready way in which the weighing is effected. The handiness of the machine for measurements of force is evident. Friction and any other kind of pulling strain can be easily and quickly ascertained.

## Analyses of Native Silver.

ALTHOUGH innumerable analyses of native silver must have been made, very few have been published in English works of reference. Partly with a view of supplying this deficiency, and partly in order to throw light upon certain archæological questions connected with the arts of alloying and soldering silver, I have lately made several careful analyses of the native metal.

I here publish the results which I have arrived at in the case of two old specimens of so-called native silver from Allemont in Dauphiné. Both were purchased at Mr. HENLAND'S sale in 1824, and were described as follows:

"No. 256. Foliated Native Silver on Arseniate of Cobalt. Allemont, Dauphiné."

"No. 324. Beautiful Specimen of Ramose Native Silver or Oxide of Cobalt. Allemont, Dauphiné."

The results of the analyses are placed under the headings of the above numbers.

| | In 100 parts. | |
|---|---|---|
| | No. 256. | No. 324. |
| Silver | 71.69 | 73.39 |
| Mercury | 26.15 | 18 34 |
| Antimony, with trace of arsenic | (2.16) | (8.27) |
| Specific gravity at 16° C | 11.10 | 10.05 |

Both 256 and 324 were crystalline in structure, the latter particularly so; both were malleable and flexible. Several silver amalgams occur in nature, but they can scarcely be reckoned as constituting so many species. The first of the above given analyses corresponds pretty nearly to the formula $Ag_5Hg$, which demands 72.97 per cent. of silver, and 27.03 per cent. of mercury. The second analysis is not represented accurately by any simple expression, the formula $Ag_9HgSb$ requiring—Ag, 75 11 per cent.; Hg, 15.46 per cent., and Sb, 9.43 per cent. Thus it will be seen that the two specimens of so-called native silver, of which I have given the analyses above, do not correspond with *arquerite* (containing 86.5 per cent. of silver) nor with any of the poorer *amalgams* (those noticed in DANA'S "Mineralogy," or KERL'S "Metallurgy") nor with *dysorasite*. But this latter mineral is recorded from Allemont, and so far as its percentage of silver is concerned, does not widely differ from our second mineral, though it is an antimonide of silver without mercury, if the published analyses be conclusive.—*Prof. Church in Chemical News.*

## North Carolina Amalgamator.

MR. J. T. TUNBRIDGE, of Newark, N. J., whose inventions of amalgamating machinery have been previously noticed by us, has lately built a new amalgamator at the gold mine of Messrs. S G. STURGES & SON in North Carolina. It is intended to catch fine, or float-gold and silver, and reduces floured mercury to its metallic state, and is called there the gold trap. Its action depends on exposing the slimes containing the precious metals to a large surface of amalgamated copper. A cylindrical vessel of thin boiler iron, whose diameter is 24 in. and depth 44 in., with a sloping bottom, has at its lowermost point a small U shaped pipe filled with quicksilver. Directly over this, and screwed in from the outside is a larger pipe turning upwards and terminating in a hopper-shaped vessel, which contains a sieve. At the bottom, a valve is attached which regulates the discharge. A cylinder, with coarse sieves at the ends, and 20 in. in diameter by 30 in. deep, is suspended in the larger vessel, and is supported by rods attached to trunnions at its center, and making it reversible at pleasure. In this cylinder is placed a quantity of S shaped pieces of amalgamated metals, or any other form best suited to prevent packing. These half fill the cylinder and expose a large surface.

The slimes are conveyed from the stamps or end of the plates, or, as in the present case, from the arrastras and hydraulic works, into the inner vessel previously filled with water; the valve is opened and a continuous stream of the slimes deprived of gold, or silver, are tailed off through a small hopper-shaped vessel containing a few of the S's.

The fine or floured quicksilver or float gold contained in the slimes, quietly descends, percolating through the mass of amalgamated metals, the gold is filtered out by adhering to the amalgamated surface. The slimes passing on arrive at the lower end of the inclined bottom of the outer vessel, and pass thence through the larger pipe upwards into the hopper, there again through a collection of amalgamated masses which deprive it of any floured mercury. The quicksilver that

drops off the pieces of metal comes in contact with the mercury in the U shaped pipe, and is immediately dissolved.

An amalgamator of the above size is sufficient to dispose of the slimes of from 5 to 30 stamps; it is continuous in its action, requiring no more power than the current of the flumes will supply, and little attention is needed while in operation. When the metallic pieces are sufficiently coated with gold or silver, they are placed in a churn of ordinary construction, with a quantity of quicksilver; a few minutes' churning suffices to remove the greater part of the amalgam. Three pounds of quicksilver will coat 100 lb. of these metallic S's, and the whole amount of mercury need not exceed 10 lb., excepting at the time of cleaning up.

An amalgamator, having the dimensions given above, can be seen at the office of Messrs. S. T. STURGES & SON, 61 and 63 Murberry street, Newark, N. J.

## Rolling Hollow Packets.

OSTRANDER'S method of rolling hollow packets of iron for the making of blanks for nuts, etc., is as follows: He builds up a hollow packet by setting upright two pieces of iron of the shape of rails, with tops and bottoms alike, at a given distance, and connecting them by means of top and bottom plates formed so that the heads of the rails are embedded in these plates; two other narrower plates are then added to fill up the rails, and the packet is bound together with straps. A mandril is placed in the hollow of the packet, which is then reduced to a round pipe by successive passes between channeled rolls. The finish is given by passing the hollow bar through the channels in the rolls to give it either a square or hexagonal form. In order to facilitate the operation of rolling, a bar supports the stem of the mandril in front of the rolls, and at the back is a table, with channels corresponding with those of the rolls, which receives and supports the hollow packet. In the case of large nuts, M. OSTRANDER makes use of actual old rails in his packet; in other cases the packet may be composed of two drawn pieces of iron, each having a semi-circular hollow throughout the whole length on one side. When the rolling is finished, the blanks are cut off and the nuts tapped and finished by any of the usual methods.

## New Suit against the Sutro Tunnel Company.

THE much assailed Mr. SUTRO is about to undergo the ordeal of another law suit, which was to be commenced, two weeks ago, by a number of the Comstock mining companies. Its purpose is to get the contracts under which the Sutro tunnel is being run cancelled. These contracts, as is well known, bind the companies to pay $2 a ton for every ton of ore extracted after the completion of the tunnel. The grounds upon which the claim is made are summed up in the Associated Press despatches as follows: "The ground of the action is the alleged total failure of the defendants to perform any part of their agreements or do any act for which royalty was to be paid. The plaintiffs claim that all the work which has been done is not more than one-tenth part of what was to be performed, and is entirely on the defendants' grounds and for their benefit alone, and can never be of advantage to most of the plaintiffs, who have reached a depth below the Sutro tunnel, and the remainder are nearly down to it. The plaintiffs further say that the time for completing the tunnel long since expired, and that the agreement contains an option on the part of plaintiffs to hold it null and void, provided the defendants did not begin and prosecute the work as stated in the contract; further, that from the time of failure of the defendants they have elected to rescind, and the defendants knew the fact." It remains to be seen whether such binding contracts as those under which Mr. SUTRO has spent several millions can be vacated on these grounds.

## The "Direct Process" in Iron Manufacture.*

BY THOMAS S. BLAIR, OF PITTSBURGH, PA.

CONCLUDED FROM PAGE 355.

THUS I secure perfect control of the heat of the thimble, and make sure that the material in the annulus will always be hot enough to be ready for dropping when a charge is drawn from below. In this way the output of the furnace is limited to but one consideration, to wit: what duration of exposure to a red heat is necessary to perfect the conversion. The amount of fuel required for heating is about one-third of a ton of iron in the sponge turned out. Any description of fuel commonly used in gas-producers will answer. As to the cooling, the reducing cylinders underneath the heating chamber are prolonged simply in wrought iron of one-fourth inch thickness, and each is surrounded by a jacket, which is kept full of water continually changed. The wrought iron cylinder ends about eighteen inches above the floor, and a sleeve, working telescope-fashion, closes the remainder of the connection when let fully down. By raising this sleeve more or less, as required, the material gushes out underneath, and as it does so the whole column of material in the cylinder descends, leaving a space at the top of the annulus, which is immediately filled up with fresh material.

I do not find that the size of the ore makes any practical difference, whether it is, say, two inches through, or any smaller. This fact has been observed in experimental work heretofore, but I have never seen, nor been able to frame for myself, any explanation that is quite satisfactory. I suggest it as an interesting subject for our fellow-members of the chemical profession.

It has been stated in the books that the sesquioxide of iron in the process of reduction first becomes magnetic oxide, then protoxide, then metallic. This appears to be demonstrated by the fact which may often (if not always) be observed in pieces too large to be "done through" (as the workmen phrase it), in the time during which they were under treatment.

If the size of the piece is large, say four inches, and the core is still quite raw, but the outside completely reduced, the concentric layer next to the core will be protoxide, the next magnetic oxide, and the next the iron sponge. Not that these layers are distinctly defined, but merge into each other at the points of contact. But if the size is kept within the limit named, there is usually no distinction to be observed, and the pieces, if anything, near raw at the core, will usually show signs of protoxide on the surface.

I must, however, qualify my remark as to the comparative time required for the reduction of pieces of different sizes. I did not mean to include ore in fine particles. This does appear to be more rapidly reduced than that which is coarser, but as it is cheaper to break the ore only to a moderately small size, and the fine powder is hence an insignificant fraction, I have not observed it closely in this particular.

With respect to the time required for treatment, it varies according to two sets of conditions.

The first is that of chemical composition. The sesquioxides are more easily reduced than the magnetic, and the latter than the protoxides. Hence, hasty reasoners, who might argue that because the sesquioxide had to pass through the stages of magnetic and protoxide before becoming metallic, it must, therefore, be the hardest to reduce, would find themselves in direct opposition to the fact. The explanation, I suppose, is this: Where the oxygen most abounds, reduction is easiest to commence, and once on the move, the operation proceeds rapidly.

The second set of conditions are those of mechanical structure. The massive materials are, as one would naturally suppose, harder to operate upon than those which are loose and open. The brown hematites are capital subjects for the reducing furnace. As soon as they reach a red heat, the water of combination is driven off, leaving an open, sponge-like structure, and, being also sesquioxides, we have both the chemical and mechanical conditions for speedy reduction. The compact hematites, such as the Iron Mountain ore of Missouri, and the red specular of Lake Superior, though sesquioxides, have no combined water, and are of a dense structure. In consequence they require a much longer treatment. The magnetic oxides, such as those of Lake Champlain and the iron sands of the St. Lawrence, being both very compact, and leaner in oxygen, require a longer time still than the compact hematites; while the protoxides, when in such a shape as, for example, the dense tap cinder from the puddling furnace, are extremely obstinate under treatment.

Among the curiosities of the reduction of iron oxides, is the fact that the intensity of action bears but slight relation, within certain limitations, to the degree of heat employed. This is a fact noted by Mr. LOWTHIAN BELL, in his experiments with the blast furnace. It suffices for our present purposes to state, as relates to it, that there would be no particular acceleration of the process gained by pushing the heat to a degree that involves danger of welding the material together while under treatment.

But I am able to announce to you another very important fact, and one not to be found in the books, namely, that at the temperature of reduction—say a fairly bright red heat, and with carbon alone as the reducing agent—no carbon whatever is taken up by the iron. I think it sufficiently indicates the state of the art of iron-sponge making as it has been hitherto, when I tell you that I asked this question direct of one of the most distinguished and most practical of the foreign authors I have already quoted, and the answer was that, to the best of his knowledge, the point had never been settled. Now, if you will consider for a moment the immense importance of this question—the question whether your product is to be wrought iron alone—a product which you can employ as iron or carburize with precision to the temper desired, or whether it is to become an unsettled and uncertain carbide of iron, to be sampled and analyzed, every lot, before using, and from which carbon must be removed if wrought iron is to be made from it; when, I say, you consider the magnitude of this question and the fact that neither the man of science nor the practical manufacturer had any answer for it, you will agree with me that the art had not yet made much progress.

But at all events, the question is now set at rest. I have had frequent analyses made of iron-sponge, produced from various descriptions of ore, and in no case has combined carbon been found. The iron sponge, sensitive as it is to many chemical reactions, only takes up carbon (when presented unaccompanied by an accelerating agent) as other wrought iron does, to wit: at the recognized heat of cementation, a heat far higher than we need to (or ought to) employ in the reducing furnace.

With respect to the carbonaceous matter used as the reducing agent, I would state that, in regular practice, we have, up to the present time, made use of charcoal. We have tried both coke and anthracite, but merely in an experimental way. We have not been prepared to remove the sulphur from either, and—having so many other things to get into working order—have preferred to run no risks in this particular. Our experiments have been conclusive, however, as to the reducing power of these substances, and we shall, early in the spring, take measures to use coke from washed coal. We have experimented with a Bradford separator, and find that the fine "slack" of the Pittsburgh coal can be so freed from sulphur that even, if none were driven off in coking, and the whole of it absorbed by the iron in the reducing cylinder, there would not be over 0.08 per cent in the iron. For the country east of the Alleghenies, the anthracite culm should furnish an exceedingly cheap reducing agent. I am informed that there is no difficulty in removing the sulphur by treatment with steam charged with alkaline vapors, and at moderate cost. I have not yet had any practical experience, however, in this matter.

The estimate of quantity required per ton of iron produced is very easily made. For brevity's sake we will consider only the sesquioxides, as they require the largest ratio of carbon. They carry 70 per cent of iron to 30 per cent of oxygen. Now, every 80 parts, by weight, of oxygen take up 22½ parts of carbon, so that we employ 22½ parts of carbon for every 70 parts of iron, or 32.14 parts of carbon to the 100 of iron. In round numbers, one-third ton of carbon to the ton of iron in the sponge. It may occur to you that this is the theoretical quantity, and that in practice it must require more. But such is not the case—at least to any appreciable extent. No carbon is used in the reducing cylinder except what is taken up by the chemical operation referred to above. None of the other oxides of which the ore is composed are reduced, and there is no free oxygen present to consume any carbon. Whatever excess, beyond the amount absolutely required, we may mix in with the ore, to secure a sufficiency throughout the mass, is regained at the bottom of the cylinder.

I would now ask your attention to the fact that, in my statements respecting reduction, I have hitherto confined myself to the case of reduction by carbon only. You are aware, however, that there are certain substances, such as cyanogen, hydrogen, etc., which, when present with carbon, exert a singular power in accelerating its combination with iron. Some of these substances, as, for example, hydrogen, are also in themselves powerful reducing agents. You will see at once how the employment of these may vary results. The hydrocarbons, for example, will produce reduction at a lower temperature or with great saving of time, but will yield an irregularly carburized sponge. The field is too large to enter upon here, and must be passed over with this brief notice, to be reverted to, however, for a moment when I come to speak of the second branch of the direct process, viz.: fusion.

There is another feature of the reducing operation which has been remarked

* A paper read at the New York meeting of the American Institute of Mining Engineers, February 26, 1874.

upon by some accurate observers, such as Mr. LOWTHIAN BELL, but which appears to have been unsuspected by the generality of those who have attempted to make iron-sponge. It is this, that the resistance of the oxygen against its dissociation from the iron increases in inverse ratio to the quantity remaining. Thus, to get out fifty per cent. of it, for instance, is a very easy and a very short operation; to get out the next twenty-five per cent. may perhaps not take much longer additional time than to abstract the first fifty per cent.; but the refractory quality in the oxygen keeps rapidly rising until it becomes practically almost a matter of impossibility to get out the last remnant of it. Ignorance of this simple law has kept many a sanguine inventor pursuing an *ignis fatuus*, and at its door must be laid the corpse of many a once cherished, but now lifeless "process."

From it arises the talk, sometimes so freely indulged in, about iron-sponge as a well known article, quite at command if wanted.

As a curiosity in this line, let me quote from an English patent of 1870, taken out by a practical manufacturer, a manager of steel works: "The reduction of the ore to the condition of spongy metallic iron is a matter of comparatively little difficulty, and may be effected in various ways," etc.

These so called iron sponges, carrying say ten per cent. of the iron as protoxide, are not the materials with which to obtain a victory over the old, well established, indirect process. They will give too poor an account in yield, however used, and they are especially objectionable for open hearth practice. Dr. SIEMENS covers the whole ground in a few words, in his American Patent, of April 11, 1871: "The metallic oxide corrodes the banks of the metal bath."

Let us turn now to the second step in the direct process, the fusion of the iron-sponge. I will pass by all other methods of treatment and confine myself to this, the most important. The open hearth gas furnace enables us to produce a homogeneous product cast into ingots. We will not stop here to discuss the various definitions of "steel" as distinguished from "iron." For present purposes we will adopt the popular conception, and apply the term steel to what a blacksmith would call steel, that is, whatever will "take a temper"—and iron shall mean, what the blacksmith would call iron, that is, what will stand the same heat and weld the same way as that which he has always called iron, and which will not take a temper.

These ingots of iron or steel (according to the ratio of carbon contained) are produced by melting wrought iron in cast iron. Here then, is an operation for which the sponge is especially adapted.

It is more fusible than any other form of wrought iron, and its mineral portion will be separated by the act of fusion without any special treatment whatever.

I had no other idea than to use the "Siemens" regenerative gas furnace (that being the one invariably employed heretofore in open-hearth practice) until I came to arrange for a licence, when I was informed by the agents in this country of Dr. Siemens, that my licence must contain the stipulation that I could only employ in the furnace such materials as he (Dr. Siemens) would permit me to use; and my iron-sponge was not embraced in the list. After repeated efforts I found it impossible to shake his determination that his furnace should not be employed for any other direct process than his own. I was, therefore, obliged to look elsewhere, and, happily, found what I sought in the gas furnace of Mr. Himan Frank, of Pittsburgh.

This furnace works on a system of "continuous regeneration," the waste gases passing continuously in one direction outward, and the air and gas supply passing continuously in one direction inward. I regret that the length of this paper compels me to omit a detailed description of this most satisfactory furnace. It gives all the heat that can be used (the endurance of the structure being the limit), and works with the greatest steadiness. All clogging of the regenerators by tar and soot is avoided by the simple expedient of alternating the currents of gas and air so that the air is made to pass through the chamber where the gas had previously been, thus burning out all those deposits, while the gas finds a clear passage in the other chamber where the air had been flowing. It is only necessary to make this alternation between heats, so that, from the time of charging until the cast is made, the only manipulation called for is the adjustment of the inlet-valves for gas and air, and of the damper of the stack.

Our present practice at Glenwood is to take the iron sponge and press it, while cold, into blooms of six inches diameter and about twelve to eighteen inches in length. A specimen of these is exhibited here. The pressing is performed by hydraulic machinery, and the force exerted is about 30,000 pounds to the square inch, or about 900,000 on the bloom. Thus prepared, we charge them into an auxiliary heating furnace, where they are brought to a bright red heat, and then thrown into the bath of the melting furnace. We use no other form of wrought iron whatever. Otherwise there is nothing peculiar in our operations, and everything goes on just as if we were melting ordinary blooms, except that the fusion is much more rapid. We have no difficulty whatever with the lining of the furnace, owing to the small amount of protoxide left in the sponge, there being decidedly less than is usually found in puddle bar. It is here that the perfection of the reduction tells.

We have operated hitherto with ores so rich—Iron Mountain of Missouri, and Red Specular of Lake Superior—that we have no excess of slag. On the contrary, we generally find it expedient to throw in a little cinder from a previous cast. When using ores which carry so much earthy matter that the slag would be in excess, we shall "bleed" it away, to the extent desired, from a cinder notch, which we have provided in the wall of the furnace.

I propose to do away with pig iron, at first in part, finally altogether. There are two ways of doing this, both of which I shall practice long enough to determine which seems preferable, and hope to have the pleasure, on some future occasion, of reporting the results to you.

In the first method I avail myself of the system of rapid carburization practiced in "case-hardening" and in the melting of wrought iron in crucibles, viz.: the employment of an accelerating agent, such as cyanogen, along with common carbonaceous material. Mixing one or more of these agents with charcoal dust, and the resultant mixture again with sponge before pressing, I have a bloom which holds the carburizing materials in intimate contact with the particles of iron, and it is a question to be developed by experience what amount of carbon can be imparted to the iron up to the time of its fusion.

In the second method I take up GÜRLT'S idea of the carburization of sponge by hydrocarbon vapors, and apply it to my reducing furnace in this way: I have tapped a gas pipe into one of the cylinders, so as to furnish an inlet by which I can force gas into and among the contents of the cylinder. This inlet is placed just above the cooler, so that the gas will enter when the material is yet hot, but has passed below the zone of reduction. I generate gas from benzine, in an apparatus placed at such a distance from the building as to be safe, and under pressure sufficient to overcome the resistance in the cylinder. I shall thus get the carburizing action without any other extra expenditure of fuel than the small amount required for generating the benzine gas. The apparatus is now just ready to go into operation, and I expect to impart such a quantity of carbon to the sponge as to render it readily fusible without the aid of a bath of cast iron.

I consider it a very desirable step in the perfecting of the direct process, that we should dispense with cast iron in the open hearth, and for two cogent reasons: first, because we have now turned the tables, and wrought iron is cheaper than pig; and second, because the less pig we use the better the quality of the product. Dr. SIEMENS, in the paper from which I have already quoted, puts this matter in a very clear light. Speaking of the desirability of a direct process, as regards the question of quality, and referring to one of Mr. LOWTHIAN BELL'S diagrams of a blast furnace, he says:

"It shows that the reduction of the metallic oxides to spongy iron is accomplished within the first twenty feet in their descent in the furnace, and at a comparatively low temperature. This upper zone is followed by one where the limestone is decomposed and the carbonization of the spongy metal is commenced. Between this second zone and the zone of fusion in the boshes of the furnace, one of great magnitude intervenes, where apparently no other change is effected than an increase of temperature of (the) spongy metal, but where in reality a very powerful reducing action is accomplished of substances which had much better not be joined to the iron. It is well known that almost all the phosphorus contained in the ironstone and the coke is here incorporated with the spongy iron. The silica is reduced to silicon, and, together with arsenic and other bases which may be present, combines with the iron. The final action in the blast furnace only consists in fusing those reduced substances and forming the slags which envelop and protect the fused metal."

On the other hand, as I have already explained, the low temperature at which the reduction of the iron oxide takes place in the direct process gives no opportunity for reduction of the other oxides accompanying it. Hence, though the mechanical union remains, there is no chemical affinity, and as we, in our second step, produce the fusion under conditions which do not allow time for the reduction of the other substances, we get away our iron uncontaminated.

Here, again, I have to regret that time and your endurance do not allow me to do more than refer to some exceptions to this, in the case of sulphur and phosphorus. As to the former, it is perhaps unnecessary for me to explain how the difficulty can be overcome. As to the latter, I will say, speaking from absolute experience, that no difficulty arises where the phosphorus exists—as in the Lake Champlain ores—in the condition of phosphate of lime. With respect to other phosphorus bearing ores, I hope to make a special report to you when I can enter into details which are inadmissible here, and after I have more extended experience. I must also defer anything beyond a mere casual reference to titanium, which gives no trouble in the direct process.

Dismissing these interesting topics, I close my explanatory statements, trusting that nothing further is needed to satisfy you that you have now presented to you a perfectly practical and thoroughly direct process for obtaining the ingot of cast steel or homogeneous iron.

Little need be said as to the value of this product. Open hearth practice has already established the fact that steel fit for all purposes short of edge tools can be produced (even when using the system of melting wrought into cast iron), and that the homogeneous metal is the type of all perfection in wrought iron. With respect to the results which will follow the introduction of the direct process into the field of iron metallurgy, I do not venture any prediction as to how speedy or how slow may be the revolution. Some time must elapse, during which the old system will regulate the market price, while the new system will (for those employing it) regulate the cost. But with such data as I will now very briefly call your attention to, it is easy to see that the old system must either be greatly cheapened, or it must, sooner or later, be overgrown by the new.

The direct process demands so much smaller an amount of fuel that the proper plan for realizing the most profitable results in practising it will be to go to the mines, and there produce the sponge at least; in many cases the ingot also. The extreme simplicity of the plant required, and the ease with which the process can be conducted on a small scale, if desirable, also point to the mine as the proper locality for the works, up to, as I say, the sponge always, the ingot often.

Take, now, such a locality, where ore of 50 per cent. metallic iron is worth $4 per ton, and charcoal is worth six cents per bushel. We have:

| | |
|---|---|
| 2 tons ore at $4 | $8 00 |
| 40 bushels charcoal, at 6 cents | 2 40 |
| Gas-producing fuel (wood), say | 1 00 |
| Wages, say | 3 00 |
| 1 ton iron in sponge | $14 40 |

Let us add $5 60 per ton for transportation to a manufacturing center, making the cost of the sponge, say $20, delivered. Add $2 per ton for cold pressing.

One ton of ingots will cost about as follows:

| | |
|---|---|
| ¾ ton cold pressed blooms, at $22 | $16 50 |
| 15 per cent. waste on same | 2 48 |
| ¼ ton Bessemer pig, at $45 | 11 25 |
| 7½ per cent. waste on the same | 84 |
| Wages, per ton | 5 00 |
| Maintenance of furnace, &c. | 2 50 |
| Spiegeleisen, 1-20 ton, at $70 per ton | 3 50 |
| ¾ ton fuel for producers, at $5 per ton | 3 75 |
| Cost of 2,240 lb. ingots | $45 82 |

Assuming that we shall be able to substitute carburized sponge for the Bessemer pig, we reduce this to about $38 50.

The figures must be varied to suit every different locality, and in those where ore is a high priced commodity and fuel cheap, there will not be as great a difference in favor of the direct process as where those conditions are reversed; but there will always be enough to give it an advantage that must tell eventually.

Finally, there is one aspect, at least, of this branch of the subject that must be gratifying to all. I refer to the humanitarian view. The word "puddling" finds no place in the direct process. No such exhausting, overtaxing labor is demanded in any of its operations, and, as it is the truly scientific method of iron metallurgy, so does it, in common with all true science, point to the ultimate reconcilement of capital and labor.

I desire, before closing, to take this opportunity to acknowledge my indebtedness to my associate and co-laborer, Mr. MORRISON FOSTER, of Pittsburgh, whose assistance, from the first inception of my experiments up to the present time, has been of the greatest value to me.

[NOTE.—The discussion on this paper will be printed in the following issue of the JOURNAL.]

# THE ENGINEERING AND MINING JOURNAL.

**NEW YORK, SATURDAY, JUNE 13, 1874.**

ROSSITER W. RAYMOND, Ph. D., JOHN A. CHURCH, E. M., } Editors.
RICHARD P. ROTHWELL, C. E., M. E., Editor of the Coal and Iron Department.

*The Engineering and Mining Journal,* is devoted to Mining, Metallurgy and Engineering. Communications on these subjects will always be welcome.

*It is the Official Organ* of the American Institute of Mining Engineers, and it alone publishes the valuable papers read before that influential society.

*Correspondence* and general communications and books for review should be addressed to the Editors. Business communications should be addressed to the Secretary.

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THE St. Louis bridge is at length formally opened to all traffic, the first public train, consisting of a locomotive and three cars, having passed over it June 9th. Gen. SHERMAN, who was of the party, drove the last spike connecting the bridge track with that of the Vandalia Railroad. The train was run over the bridge several times, and about one-third the way into the tunnel on the St. Louis, finally halting in the center span of the bridge. The tests for deflection will be made in a few days.

THE commission appointed by Act of Congress to investigate the causes of steam boiler explosions is preparing to resume its work. It expects to continue for two years yet, and will not make a report until its labors are finished. If the Commissioners will allow us to offer a mild suggestion, it is that, instead of making their experiments the occasion of a popular excursion, as they did last year, they take pains to exclude unprofessional people, and to obtain the presence of men competent to understand the proceedings. Among the results arrived at last year was the discovery of a great variation in steam gauges from different manufacturers. This has sometimes amounted to 5 or 10 lb., even at low pressures. If a boiler registered to bear 30 lb. pressure is actually kept at 40 on account of a faulty gauge, it is easy to see that an unlooked-for element of danger exists. To remedy this, it is proposed to establish a Government Standard Gauge in Washington, at which suspected gauges can be tested. This gauge will consist of a column of mercury 150 ft. high, set up in one of the towers of the Smithsonian Institution. This will give a pressure of more than 800 lb. to the inch. The Secretary of the Treasury will then issue an order requiring all gauges to conform to this standard, and inspectors will have authority to send any suspected gauge to be tested. Manufacturers will not be required to test every gauge they make in Washington, but merely to make such instruments as will conform to the standard.

AFTER some hesitation the Senate has refused to pass the House bill authorizing Captain EADS, of St. Louis, to undertake the improvement of the mouths of the Mississippi. His plan is to build jetties on each side of the stream, and thus narrow the channel. This ought, in theory, to give a swifter current by which the stream would be compelled both to carry its silt further out to sea, and also to remove some of that already deposited, and thus deepen itself. We say it ought to do by all the rules of mathematics and physics, and no doubt it would if the problem were a simple one. But, being complicated by a great many circumstances, this mode of deepening streams has not always succeeded. The traveller in Europe will find great numbers of the mountain streams treated in this way for the sake of extending the arable land. There the jetties are usually placed opposite each other, and the narrowing of the stream really takes place. But in this country it has been customary to alternate the dams or jetties on the opposite sides of the river, and the result is failure, as the Ohio and other streams show. We do not believe the project of Captain EADS will meet the approval of the Engineer Corps in Washington. But it is not on account of the probable success or failure of the plan that we object to accepting the St. Louis engineer's offer. We do not believe in committing the engineering of our great rivers to private hands. If the Government engineers are not competent men discharge them, and get those who are able ; but the great government works ought to be, in all cases, planned and carried out by men who are interested for the Government alone. When the St. Louis bridge drew near to completion the Government engineers showed that it should never have been built. The bridge, as a thing in itself, was a beautiful, if costly, piece of work. But in its construction the good of the country and the rights of the people as a whole were entirely neglected, and a structure was put up that will ever remain an obstruction in the greatest water high-way of the continent. The Government will do well to guard against a similar error in doctoring the mouth of the same stream. If the mouths of the Mississippi need dentistry, let the Government doctors have charge of the work from beginning to end.

## The Japanese Geological Survey.

MR. BENJAMIN S. LYMAN, Geologist and Mining Engineer to the Government of Japan, has made the preliminary report of his first season's work in surveying the island of Yesso. The ground covered comprised the four southwesternmost provinces—Oshima, Shiribets, Iburi, and Ishcari—about one third of the island. He distinguishes the following groups of rocks : Alluvium, new and old ; volcanic-pebble rocks, volcanic rocks, rocks of the Toshibets Karafto system of folds, coal bearing rocks, and two other systems of folds. The later alluvium is very rich, and even where, as in one case, a very recent volcanic eruption has deposited a layer of pumice on the surface, the rich black soil is found a foot below. The older alluvium lies in terraces that vary from a few yards to miles in width, and is found on the sea coast. Mr. LYMAN does not consider them true terraces except in certain localities. He calls them "bluff deposit." The volcanic-pebble rocks have been called "tufa conglomerates," but he considers them to be water-worn fragments of volcanic rocks. Of volcanoes there are 6 active ones mentioned in the report, two of which have in late times thrown out pumice. These are the only pumice volcanoes that have been active in historic times.

But in the geology of the island, as partially developed in this preliminary survey, there is little of interest. The real purpose of the survey was the development of the mining resources of the island, and in this respect we are sorry to see that the Japanese are doomed to disappointment. Coal, iron-sand, sulphur, gold, and rock tar were known to exist, and some of them have formed the subject of considerable industries. The survey shows that the coal may prove very valuable, but that none of the other minerals are likely to come to anything important.

The coal is not Carboniferous, but Tertiary, and closely resembles that of our own Rocky Mountains, which certainly gives it very high rank among the lignites. Mr. MUNROE, the only American assistant on the survey, found that, chemically, it compared well with English and American carboniferous coals. Two principal fields have been examined. The Kayanoma field covers half a square mile, and contains 6 workable beds, varying from 3 to 8 feet in thickness. The coal contains from 6⅔ to 9 per cent. of ash, and, with the exception of specimens from one locality, does not cake in the fire. The beds lie in the form of a saddle, and the field contains perhaps 1,500,000 tons above its lowest natural drainage, and as much more for every hundred feet in depth below that. It lies only about two miles from the sea, where the harbor of Chatsurrai can be enlarged and made safe.

The Horumui coal field is much larger. Only a part, 3 miles long by ½ mile wide, was surveyed, and this seemed to be part of a very large field. Six workable beds, from 3 to 5 feet thick, are known. The coal is "a brightly shining brown coal," which Mr. MUNROE assayed (evidently with the blow pipe) as follows :

| | |
|---|---|
| Moisture | 4·8 |
| Volatile matter | 39·5 |
| Fixed carbon | 52·4 |
| Ash (fawn color) | 4·3 |
| Coke (friable and dull) | 56·7 |

This coal is firmer than that of the previous field, and as there are ten million tons above natural drainage, the field has especial importance. It lies 12 miles from the Ishcari river, which is navigable to boats, and thence to the sea is a distance of 30 miles. A railroad 80 miles long would connect the field with the excellent harbor of Mororan, and Mr. LYMAN thinks the coal would amply repay the cost of the road.

The other coal fields examined have no economic importance. Of iron-sand there are two varieties : one easily smelted, and probably pure; and the other difficult to smelt, and supposed to contain titanium. The total amount noticed was 125,500 tons, containing 91,000 tons of iron ; but of this amount only 5,500 tons are of the easily smelted kind. This sand has been worked in bloomaries, but they appear to be mostly abandoned. Sulphur is collected from several volcanoes, but the whole amount estimated in the known deposits is 500 tons.

Gold is found in placers, one of which covering three and six-tenths square miles, and 6 to 12 feet thick, was estimated to contain 4 and possibly 5 cents to

the cubic yard. This would give a value of $1,500,000 for the field, but it has already been largely worked, and probably is not worth more than one million. Other fields bring the total up to one and a quarter million dollars. Gold mining in Yesso is, therefore, not a very promising possibility. Rock oil is also of trifling value, exuding mostly from surface shales.

But though the mining prospects are much less flattering than the Japanese hoped, the determination of the coal as a Tertiary lignite of the best quality, existing in quantities sufficient to meet all demands for many years, is certainly a result of no mean importance. Japan, in the rise toward commercial and manufacturing importance which it contemplates, will find in the coal beds its strongest supporter.

The American officers of the survey are Messrs. BENJ. S. LYMAN and HENRY S. MUNROE, who are aided by a number of Japanese gentlemen.

## NEW PUBLICATIONS.

VAN NOSTRAND publishes in his *Science Series* an interesting treatise on Compound Engines, translated from the French of A. MALLET. In this essay the history of the expansive use of steam is traced from the early applications of WATT, HORNBLOWER and WOOLF, down to the modern revival of the double-cylinder form, and discusses the theory of the WOOLF and WOLFF engines, and the causes of the physical superiority of compound engines over those having a single cylinder. These causes are declared to be two: First, the difference of extreme temperatures in each cylinder is less, and the interior condensation is diminished; secondly—and this applies only to engines with an intermediate reservoir—there is a partial removal of suspended water from the stream at the time of its leaving the first cylinder; so that the water does not pass in a liquid form to the second cylinder. In conclusion, M. MALLET gives some suggestions concerning the determination of the useful effect of engines, and the question whether by increase of pressures and expansions indefinite improvements may be realized. Like all the little 16mos. of this series, the volume contains a dozen pages of Van Nostrand's Catalogue of Scientific Publications. This is by no means uninteresting reading; but the purchaser of the whole series buys it a good many times over.

WILL'S TABLES FOR QUALITATIVE CHEMICAL ANALYSIS. Second American from the Ninth German Edition. Edited by Prof. CHARLES F. HIMES, Ph. D. Philadelphia: HENRY CAREY BAIRD. $1 50.

The tables which Prof. WILL originally published for the use of the students in the celebrated Laboratory of Giessen, have had a world-wide celebrity and use. In the course of nine re-issues they have been constantly revised and extended, following the development of chemical knowledge during the most productive period of the science. Prof. HIMES says in a short preface that their republication in the present instance is an outgrowth of the change which has taken place in Dickinson College (Carlisle, Pa.), where the scientific course has been extended in compliance with the general tendency of education throughout this country. He presents the tables as being well fitted for the use both of the student whose ends are only the attainment of a liberal scientific education, and for the strictly scientific student. In doing so he only follows out the conviction which is now-a-days everywhere apparent, that attainments in scientific knowledge, even though they are only of a general character, must be made through the same channels that specialists use. The studies for a liberal education may be less profound, but they are in the same field as the studies for the technical professions.

The Tables are fourteen in number, including methods for the qualitative analysis of all possible compounds, and preceded by a chapter describing the mode of carrying out such analyses. Among the tables are two in which BUNSEN'S flame reactions are used. The American editor not only includes all the latest additions of the author, but has also introduced new matter of his own.

THE PRINCIPLES OF CHEMISTRY AND MOLECULAR MECHANICS. By DR. GUSTAVUS HINRICHS, Professor of Physical Science in the State University of Iowa, Member of several Scientific Societies of France and Germany. Davenport, Iowa: DAY, EGBERT & FIDLAR; New York: B. WESTERMANN & Co., 1874.

This volume is the third one of a series, which Professor HINRICHS is engaged in publishing, and of which two earlier volumes, containing the elements of physics and the elements of chemistry and mineralogy, have already received notice at our hands. As the reader will infer from the title of this book, in which "principles" have been substituted for "elements," it belongs to a higher grade in instruction than the two others. Professor HINRICHS, in his introduction, divides the subject into three parts, of which the first is theoretical chemistry, including the general laws of chemical processes, the formulæ representing the compounds, and the physical phenomena manifested during their formation; the second, systematic chemistry, comprising a description of the most important chemical compounds in systematic order; and the third, applied chemistry. On examining the book, however, we find that parts second and third are practically omitted; a page or two only of general observations being devoted to each. The book is, therefore, to be considered as a treatise on theoretical chemistry. As such, it is divided into two sections, treating respectively of molecular statics, and molecular dynamics. Under the first head fall the subjects of atomic weight, volume, and heat; atomicity, chemical constitution, stoichometry, etc.; under the second head, the topics of molecular motions as determining solid, liquid, and gaseous conditions; ebullition, dissociation, etc., and caloration, or the generation or absorption of heat and crystallization.

Professor HINRICHS is as far as possible from being one of those manufacturers of school books, who are content to copy or abridge treatises of original investigators, and who make the presentation of a science "popular" by taking out as much mathematics and logic, and putting in as many pictures, as possible. Originality is at once the greatest merit and the greatest fault of his books of instruction. In the present case we find a large number of original views included in this treatise, and so many references to the other works of the author, and to his atomic theory, and peculiar classification in genera and species of the elementary bodies, that we are forced to confess, that the book can scarcely be used as a manual of study, except by those who have already become familiar with his views as laid down in the Elements of Physics and Chemistry, and in his papers on Atomechanics. On the other hand, the advanced chemical student, and especially the teacher of chemistry, will find this book, like those which preceded it, brilliantly suggestive and stimulating as a theoretical discussion, and full of clever devices in manipulation and in graphic demonstration. In the latter department, Professor HINRICHS is particularly ingenious and successful. In his hands curves and dots are full of significance, and the intricate theories of modern chemistry are much simplified by his method of presentation.

We must frankly express our regret that a work so full of genius, proceeding from a chemist of acknowledged practical skill and experience, and endowed with unusual aptitude as a teacher, is so permeated with the peculiar views and nomenclature of its author, that other teachers will be, to a large extent, prevented from recognizing its value, and making use of it. Professor HINRICHS is nothing if not controversial; and many passages in his book are better suited to a controversy than to a didactic treatise. In a few instances, a still sharper criticism is deserved. Sarcasm in such a work is entirely out of place; and, when it carries a tone of personal bitterness, it is a blunder as well as a fault. Professor HINRICHS would, in our opinion, do well to omit, in future editions of this book, sentences such as may be found on pages 166 and 188. They certainly will add nothing to the student's knowledge of chemistry, and will, we think, set a bad example in taste.

## American Institute of Mining Engineers.

FOURTH ANNUAL MEETING, ST. LOUIS, MAY 27, 1874.

THE papers read at the St. Louis meeting, with the discussions, will be published as rapidly as possible. The Secretary of the Institute has furnished the following condensed account of this most successful meeting.

The first session of the Institute was held in the hall of the Washington University, Wednesday evening, May 27 h, President RAYMOND in the chair. After the address of welcome by HON. THOMAS ALLEN and the reply of Mr. RAYMOND, the following names were presented for election as members and associates, duly endorsed by the Council. They were unanimously elected:

*m* HENRY BOOTH, 31 Union Square, New York.
*m* CHAS. H. MORGAN, Worcester, Mass.
*m* HOWARD PAINTER, West Chester, Pa.
*m* Dr. M. J. GOODFELLOW, Eberhardt, White Pine Co., Nevada.
*m* OTTO WITTELSBACH, Eureka, Nevada.
*m* JOHN T. WILLIAMS, 43 W. 38th St., New York.
*a* CHAS. A. YOUNG, 536 N. 4th St., Philadelphia.
*m* CHAS. E. STAFFORD, Institute of Technology, Boston, Mass.
*m* ARNOLD HAGUE, Orange, N. J.
*m* RICHARD PEARCE, Black Hawk, Colorado.
*m* W. R. MAFFET, Wilkes-Barre, Pa.
*m* Prof. KOENIG, University of Pa., Philadelphia.
*m* Prof. R. NUTTING, Jr., Indianapolis, Indiana.
*m* EDWIN MICKLEY, Hockendauqua, Pa.
*m* G. C. BROADHEAD, St. Louis, Mo.
*m* Dr. ADOLPH SCHMIDT, St. Louis, Mo.
*m* ALEXANDER LEONHARD, St. Louis, Mo.
*m* EDWARD D. MEIER, 26 North Main St., St. Louis, Mo.
*m* JOHN W. MEIER, 26 North Main St., St. Louis, Mo.
*m* Prof. FORREST SHEPHERD, St. Louis, Mo.
*m* EDWARD WALSH, Pilot Knob, Mo.
*m* GEORGE RIGGS, St. Louis, Mo.
*a* COL. CHAS. B. PARSONS, Cadet, Mo.
*a* W. A. SCOTT, Mine La Motte, Mo.
*m* Prof. PAUL SCHWEITZER, Columbia, Mo.
*m* WM. E. GUY, 1801 Washington Ave., St. Louis, Mo.
*a* WM HARRIS, 1801 Washington Ave., St Louis, Mo.
*m* HENRY BLACK, Pittsburgh, Pa.
*a* W. NOYES, School of Mines, New York.
*m* W. LORENZ, Chief Eng. Phila. and Reading R. R, Phila.
*a* E. A. WHETMORE, School of Mines, New York.
*a* S. H. RUSSEL, 417 Fifth Ave., New York
*a* J. K. REIS, 303 E. 17th St., New York.
*m* PHILIP N. MOORE, Lexington, Ky.
*a* JOHN W. PACK. Rolla, Mo.
*a* HON. THOMAS ALLEN, St. Louis, Mo.
*m* JOHN H. MAXON, 324 N. 3d St., St. Louis, Mo.
*a* JOS. E. WARE, St. Louis, Mo
*a* T. A. MEYSENBURG, East St. Louis, Ill.
*a* W. F. PATRICK, Washington University, St. Louis, Mo.

And the following foreign members:

AUG. H. STRONGITHARM, Barrow-in-Furness, England.
JOHN WESTRAY, Loftus Iron Co., Cleveland, England.
WM. CROSSLEY, " " " " "

Dr. W. G. ELIOT, Chancellor of Washington University, gave the members of

the Institute a hearty welcome to the University, and placed the rooms and collections at their disposal. A cordial invitation was received from the President of the University Club, Hon. THOS. ALLEN, to partake of the privileges and hospitality of the club.

The President, on behalf of the Council, made the following annual report:

The Council respectfully report that during the past year the Institute has held three meetings, in Philadelphia, Easton, and New York, all of which have been largely attended and of great professional interest. The papers read were as follows:

1. Economical Results of Smelting in Utah. By ELLSWORTH DAGGETT.
2. On the Geology of the North Shore of Lake Superior (supplementary paper). By Dr. T. STERRY HUNT.
3. The Compression of Air. By Prof. B. W. FRAZIER.
4. On the Incidental Results of the Danks Puddler. By Dr. THOMAS M. DROWN.
5. On the Mines of the Wilkes-Barre Coal and Iron Company. By. J. H. HARDEN.
6. An Adjustable Drawing Trestle. By J. H. HARDEN.
7. The Manufacture of Bessemer Pig Metal at the Fletcherville Charcoal Furnace. By T. F. WITHERBEE.
8. Experiments at the Lucy Furnace. By ED. C. PECHIN.
9. The Utsch Automatic Jig. By H. ENGELMANN.
10. On the Calorific Power of the Western Lignites. By R. W. RAYMOND.
11. On an Improved Micrometer. By E. B. COXE.
12. The Büttgenbach Furnace. By Prof. F. PRIME, Jr.
13. Fighting Fire. By OSWALD J. HEINRICH.
14. Shaft Sinking with the Diamond Drill (supplementary paper). By E. B. COXE.
15. On Mine Surveying. By OGDEN HAIGHT.
16. Mode of Subdividing and Special Use of Subdivided Blast Furnace Slags. By J. J. BODMER.
17. Coke from Lignites. By. A. EILERS.
18. The Wyandotte Silver Smelting and Refining Works. By W. M. COURTIS.
19. The Manufacture of Compressed Stone Bricks. By J. J. BODMER.
20. What is the Best System of Working Thick Coal Seams? By OSWALD J. HEINRICH.
21. On a Modification of Coingt's Charger. By FRANK FIRMSTONE.
22. On the Coal and Iron of Alabama. By R. P. ROTHWELL.
23. Turquoise Mines in New Mexico. By R. W. RAYMOND.
24. On the Occurrence of Diamonds in South Africa. By R. W. RAYMOND.
25. The Brückner Revolving Roasting Furnace. By J. M. LOCKE.
26. Determination of Sulphur in Pig Iron and Steel. By Dr. THOMAS M. DROWN.
27. Explosion at the Dunbar Furnace. By EDMUND C. PECHIN.
28. On Hydraulic Forging. By Prof. W. P. BLAKE.
29. On Underground Transportation by Chain, at the Hasard Collieries, Belgium. By Prof. W. P. BLAKE.
30. On the Coals of the Hocking Valley, Ohio. By Dr. T. STERRY HUNT.
31. On Broken Stay Bolts. By W. S. AYRES.
32. The Mount Lincoln Smelting Works at Dudley, Colorado. By E. D. PETERS, Jr.
33. Lead and Silver Smelting in Chicago. By J. L. JERNEGAN.
34. The Formation of Fissures and the Origin of their Mineral Contents. By A. J. BROWN.
35. The Diamond Drill for Deep Boring compared with other Systems of Boring. By OSWALD J. HEINRICH.
36. Improved Method of Measuring in Mine Surveying. By E. B. COXE.
37. The Magnetic Iron Ores of New Jersey. By Prof. J. C. SMOCK.
38. The Manufacture of Iron Sponge. By THOS. S. BLAIR.
39. Stamp Mills of Lake Superior. By Prof. J. F. BLANDY.
40. Analyses of Furnace Gases. By Prof. T. EGLESTON.
41. On Bessemer Steel. By ARCHIBALD MCMARTIN.
42. The Treatment of Gold and Silver Ores by Wet Crushing and Pan Amalgamation without Roasting. By J. M. ADAMS.

During the year there have been elected 62 members, 38 associates, and 31 foreign members, an accession to the Institute of 131. A number of members and associates have been dropped from the lists for the non-payment of dues. The total number of members and associates at present is 281, foreign members 43, and honorary members 4.

The first volume of Transactions of the Institute has been sent to all members and associates. Besides, there have been 34 copies distributed to home periodicals and societies, 27 copies to home libraries, 74 copies to societies and periodicals abroad, and 24 copies have been sold.

The Treasurer's statement shows that the total receipts for the year have been $2,850, and a balance from the previous year of $1,569 74. The expenditures have been $4,222 68, leaving a balance in the treasury of $197 06.

One of our most esteemed and able members has died during the year, Mr STEPHEN HARRIS, of Pottsville, in which event the Institute and the community generally have suffered a great loss.

At the conclusion of the reading of the report of the Council, Mr. E. B. COXE spoke feelingly of the death of Mr. HARRIS, and moved that a committee be appointed to prepare resolutions expressing the sense of the Institute at this sad event.

The President appointed Messrs. COXE and PECHIN, who reported at a subsequent session the following resolution:—

Whereas The Institute of Mining Engineers has heard with great regret the sudden and violent death of STEPHEN HARRIS, one of its members, encountered in the discharge of professional duty,

*Resolved*, That the Institute has lost one of its most valued colleagues, the profession an accomplished member, and the community a high-toned and honorable gentleman.

*Resolved*, That a copy of these resolutions be entered on the minutes of the Institute, and a copy be sent to the family of Mr. HARRIS.

The scrutineers appointed by the President to inspect the ballots for officers of the Institute, reported the following elected: President, R. W. RAYMOND; Vice Presidents, A. L. HOLLEY, W. B. COGSWELL, JOSEPH C. KENT; Managers, B. W. FRAZIER, THOMAS S. BLAIR, JOHN S. ALEXANDER; Treasurer, THEODORE D. RAND; Secretary, THOMAS M. DROWN.

(TO BE CONTINUED.)

## The Statistics of Coal Production.

THERE are few questions in the coal trade so interesting, or of so great importance, as full and accurate statistics of the production and consumption of coal, and none but those who have endeavored to procure them know the difficulty there is in doing so.

With much trouble we have succeeded in compiling returns which we believe to represent the total product of our anthracite mines, with the exception of the coal mined at a few collieries on one road, and a portion of that consumed or sold direct from the collieries, and not carried over any road.

There is but one other paper that undertakes to give these statistics—that is our valued contemporary, the Pottsville *Miners' Journal*; and as our reports do not agree, and we claim, and it is not denied, that ours are the fullest and most accurate published, our confrère explains the difference by stating that while the ENGINEERING AND MINING JOURNAL publishes the total production, with the exceptions just mentioned, the Pottsville *Miners' Journal* gives only the coal which is sent *out of* the coal regions. This by no means explains the difference, and we beg to suggest the cause of some of the errors that appear to have slipped into the calculations of that enterprising paper. We are fully aware of the care necessary to eliminate from the official returns the duplication of tonnage. Some of the coal is carried over two, or even three roads, and returned by each; also, some of the anthracite roads commence their fiscal year with the 1st December, others with the 1st January. We have made our returns all commence with the year.

The coal from the Beaver Meadow region used to come exclusively over the Lehigh Valley Railroad, but at present a large portion goes direct from the mines on to the Lehigh and Susquehannah Railroad. Our friend has thus omitted to count some 130,000 tons. In the Wyoming region the Pottsville *Miners' Journal* has duplicated some of the returns; and in the reports of the Philadelphia and Reading Railroad Company (Schuylkill region) our reports, after making the deductions of coal received from connecting roads, are still 150,000 tons more than theirs. Over 130,000 tons of this is reported as consumed by the Philadelphia and Reading Railroad. We naturally include this in our table of production; but possibly the *Miners' Journal* may omit it as not going out of the region.

Statistics, to be of value, must be accurate; and while our reports we believe to be so, and full also, with the exceptions already noted, which are not reported in any other paper, and which we hope soon to obtain, we are not above learning if our contemporary can point out wherein we lack or err.

Statistics of production of the bituminous coals are still more difficult to obtain, and our tables are, as yet, very far from complete.

## CORRESPONDENCE.

### Nova Scotia Coal Trade.

AN esteemed correspondent writes us from Halifax, N. S., that "Mining in this Province is at present very much depressed. There is no demand for coal in any part of the Dominion. The stocks of last fall were large, and the winter consumption much smaller than anticipated. No great activity is looked for until mid-summer, when consumers will begin to inquire for fresh supplies. The reduced price of coal in England also threatens to check the trade with the St. Dawrence, and the doubt as to the reciprocity treaty, coupled with strong competition from the operators of bituminous mines in the States, has brought freight shipments almost to a standstill. Contracts are freely offered at much reduced rates merely for the sake of keeping the mines open.

THE CANADIAN STEEL COMPANY have taken hold of the Londonderry iron mines and are preparing to greatly extend their works. The plans are not yet fully decided upon, their agents only having been on the ground some three weeks. No appearance yet of any other iron works starting. Some parties are thinking of finding a market, if possible, for the ore.

## The Russian Coals From the Basin of the River Don.

From the *Journal of the Franklin Institute*

THE carboniferous strata of the basin of the River Don, in Russia, contain immense deposits of coal, which are now being mined, and will doubtless soon be advantageously substituted for English coal along the shores of the Black and Mediterranean Seas. Some of this coal has an exceptional purity, yielding, even when burned in large quantities, only two or three per centum of ash. Its qualities have been carefully investigated by A. SCHEURER-KESTNER and CHARLES MEUNIER-DOLFUS, who have accurately determined its ultimate chemical composition and its total calorific effect when consumed in oxygen, employing for the latter purpose an improved Favre and Silbermann calorimeter. They made similar determinations, also, for a Russian lignite, from Toula, in the Government of Riazan.

The calorific effects thus obtained have an interest additional to their use in determining the commercial value of the coal, as furnishing a test of the reliability of that law of DULONG which assumes the calorific effect of coal free from hygroscopic moisture to be the sum of the calorific effects of its combustible elements less the portion of hydrogen required to form water with the whole of its oxygen. The correctness of this law had previously been extensively investigated, by Messrs. SCHEURER-KESTNER and MEUNIER-DOLFUS, for many of the coals of the upper Rhine, for two Welsh coals, and for six lignites of Bohemia, the lower Alps and the mouths of the Rhone. The result was that the coals gave experimentally a calorific effect from three to twelve per centum higher than was obtained by calculation according to DULONG'S law. Of the six lig-

nites, one gave experimentally five per centum less calorific effect than was due to the calculation, but the remaining five gave a greater calorific effect than was due to the calculation by respectively 3·0, 12·7, 20·9, 13·5 and 8·3 per centum.

The Russian coals of the Don differed from the coals just cited in giving experimental calorific effects nearly the same as were derived from calculation. For instance, of the three coals examined, one gave an experimental calorific effect 0.8 per centum higher than the calculated one; another gave an experimental calorific effect 0.9 per centum lower than the calculated one; while the experimental calorific effect of the third was 1 5 per centum higher than that due to the calculation. To these may be added an anthracite examined by Messrs. FAVRE and SILBERMANN, which gave experimentally the calorific effect due to the calculation. Some cellulose examined by Messrs. SCHEURER-KESTNER and MEUNIER-DOLFUS, gave a similar re ult; that is to say, the calorific effect given by calculation, according to DULONG's law, was obtained by experiment in the calorimeter.

Messrs. SCHEURER-KESTNER and MEUNIER-DOLFUS are confident of the accuracy of their calorific determinations to within one per centum, but the experimental inquiry is a difficult one, and the direct result requires somewhat uncertain corrections of much magnitude for disturbing causes. Again, should the ultimate analyses of the coals be but very slightly erroneous in assigning too little hydrogen, and it is almost impossible to so completely isolate it as to ascertain its full quantity, the inferiority of the calculated to the experimental calorific effect would nearly vanish.

A notable difference between the coals and lignites is that the coals gave experimentally a calorific effect not only greater than the calculated calorific effect according to DULONG's law, but greater than is due to the sum of the calorific effects of the elements without deduction of the hydrogen required to form water with the oxygen; while the lignites (with one exception), although giving experimentally greater calorific effects than are due to the calculation, gave less calorific effects than are due to the sum of the calorific effects of the elements.

If, however, the accuracy of the experimental results be admitted, then, starting from the fact of the equality of the experimental and calculated calorific effects of cellulose, and assuming lignite and coal to be formed principally from cellulose, the conclusion is reached, as regards heat of combustion, that cellulose, lignite and coal form a series in which the cellulose, when transforming into lignite and into coal, *undergoes a modification accompanied by absorption of heat*, the absorption being much more considerable for the coal than for the lignite.

The problem is one of the highest industrial importance, and its satisfactory solution requires much more extended trials to be made by other apparatus and by other experimenters. Any difference that may thus be finally established between the experimental and the calculated results will probably be but very small, and confined almost entirely to the volatile portion of the coal which, even if composed of the same ultimate elements in the same proportion, may have them combined into very different proximate principles, requiring different quantities of heat for their volatilization and decomposition. In the meanwhile, the results of calculation according to DULONG's law, which is one based on rational considerations, may be accepted as giving at least *relative* determinations with sufficient accuracy for the purpose of practice.

The calorific effects are expressed by the number of pounds of water, at the temperature of 32 degrees Fahrenheit, which would be raised one degree Fahrenheit under the pressure of 29.92 inches of mercury, by the heat developed during the complete combustion of one pound of the substance, supplied at the temperature of 32 degrees Fahrenheit, and having the products of its combustion cooled down to the same.

The percentum by weight, and the character of the coke derived from the above by calcination in a retort, are as follows: The Groucheaski anthracite gave 91 per centum of feebly agglomerated residue. The Mioucki coal gave 80 per centum of very hard coke. The Galoubosski coal gave 60 per centum of well agglomerated coke, but less tenacious than the preceding. The lignite was brown in color, and broke into lamellated fragments, with sharp edges and concho idal faces.

| | Composition of the Coals of the Don, in per centum of their weight. | | | | | | Composition of the Lignite of Toula, in per centum of its weight. | |
|---|---|---|---|---|---|---|---|---|
| | Anthracite. Groucheaski. | | Coal. Mioucki. | | Coal. Galoubosski. | | Lignite. Toula. | |
| | Crude. | Less Ash and Water | Crude. | Less Ash and Water | Crude. | Less Ash and Water | Crude. | Less Ash and Water |
| Carbon | 91.20 | 96.66 | 89.97 | 91.45 | 77.47 | 82.67 | 54.37 | 73.72 |
| Hydrogen | 1.27 | 1.35 | 4.43 | 4.50 | 4.75 | 5.07 | 4.49 | 6.09 |
| Oxygen and Nitrogen, with trace of Sulphur | 1.88 | 1.99 | 3.98 | 4.05 | 11.48 | 12.26 | 14.89 | 20.19 |
| Ash | 1.57 | .... | 0.23 | .... | 1.42 | .... | 16.86 | .... |
| Hygroscopic water | 4.08 | .... | 1.39 | .... | 4.88 | .... | 9.39 | .... |
| Total | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| | Calorific effects. | | Calorific effects. | | Calorific effects. | | Calorific effects. | |
| Pounds of water, by experiment, raised 1 deg. F. by one pound of the crude coal and lignite | 14,139 | | 15,383 | | 13,509 | | 10,429 | |
| Pounds of water, by experiment, raised 1 deg. F. by one pound of what remains of the coal and lignite after deducting ash and water | 14,866 | | 15,651 | | 14,438 | | 13,837 | |
| Pounds of water, by calculation according to the sum of the calorific effects of the elements, raised 1 deg. F. by one pound of what remains of the coal and lignite after deducting ash and water. | 14,899 | | 16,103 | | 15,181 | | 14,513 | |
| Pounds of water, by calculation according to Dulong's law, raised 1 deg, F. by one pound of what remains of the coal and lignite after deducting ash and water. | 14,742 | | 15,791 | | 14,227 | | 12,944 | |

The following table contains the composition and calorific effects of two first-class Welsh steam coals, with which the Russian coals will be brought in competition in the Black and Mediterranean Seas. The Welsh coals were investigated by Messrs. SCHEURER-KESTNER and MEUNIER-DOLFUS with the same apparatus and in the same manner as in the case of the Russian coals; the results, therefore, are strictly comparable.

| Name of Coal. | Composition of the Welsh Coals, less Ash and Hygroscopic Water, in per centum of their weight. | | | Calorific effect, by experiment, in pounds of water raised 1 deg. Fahr. by one pound of what remains of the coal after deducting ash and water. |
|---|---|---|---|---|
| | Carbon. | Hydrogen. | Oxygen and Nitrogen. | |
| Bwlf | 91.08 | 3.83 | 5.09 | 15,804 |
| Powell | 92.49 | 4.04 | 3.47 | 16,108 |

## COAL TRADE REVIEW.

### Import Duty on Coal.

*Anthracite* free. *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c., gold.

Not otherwise provided for, per ton, 40c. gold.

NEW YORK, June 13, 1874.

**The Production of Anthracite Coal** for the week ending May 30, 1874, was as follows:

| Ton of 2240 lb. | WEEK. Tons. | YEAR* Tons. |
|---|---|---|
| *Wyoming Region.* | | |
| Delaware and Hudson Canal Co | 56,306 | 1,071,898 |
| Delaware, Lackawanna and Western R.R | 65,892 | 1,106,431 |
| Pennsylvania Coal Co | 30,865 | 515,245 |
| Lehigh Valley R.R | 19,550 | 432,992 |
| Pennsylvania and New York R.R | 1,331 | 31,212 |
| Central Railroad of New Jersey | 30,401 | 560,461 |
| | 204,345 | 3,718,239 |
| *Lehigh Region.* | | |
| Lehigh Valley R.R | 67,013 | 1,302,024 |
| Central Railroad of New Jersey | 21,858 | 419,491 |
| †Danville, Hazleton & W. B. R.R. | 2,299 | 10,763 |
| | 91,170 | 1,732,278 |
| *Schuylkill Region* | | |
| Philadelphia and Reading R.R | 120,402 | 1,996,808 |
| Shamokin and Lykens Valley | 18,486 | 312,066 |
| | 138,888 | 2,308,874 |
| *Sullivan Region.* | | |
| Sullivan and Erie R.R | — | 11,512 |
| Total of all the regions | 434,403 | 7,770,903 |

* Year beginning Jan. 1.
† From the Penn. R.R. Co.'s report, May 30.

**The Production of Bituminous Coal** for the week ending June 6th, was as follows:

Ton of 2000 lb.

| | Week. Tons. | Year. Tons. |
|---|---|---|
| Cumberland and Pennsylvania R.R. | 58,275 | 848,870 |
| Cumberland Branch R.R. | 6,986 | 86,939 |
| Barclay R.R. | 8,898 | 119,106 |
| Huntingdon & Broad Top R.R. | 4,605 | 104,127 |

As bituminous coal is usually carried and sold by the net ton of 2000 lb., our tables since June 6 have been so computed. Previous to that date the reports in a few instances were in tons of 2240 lb. Anthracite is all carried and sold in gross tons of 2240 lb.

**The Production of Bituminous Coal** on the line of the Pennsylvania Railway and branches, as per report for the week ending May 30:

Tons of 2000 lb.

| | Week. Tons. | Year. Tons. |
|---|---|---|
| Snow Shoe | 3,619 | 31,180 |
| Tyrone and Clearfield | 2,305 | 244,489 |
| Allegheny Region, Penn. R.R. | 1,672 | 100,181 |
| West Penn. R.R. | 4,641 | 92,992 |
| Southwest Penn. R.R. | 1,485 | 4,124 |
| Gas Coal, Penn. R.R. | 6,689 | 341,950 |
| Pittsburgh Coal, Penn. R.R. | 2,843 | 163,328 |

The shipments of bituminous coal by the South and North Alabama Railroad to April 1st, were:

| | |
|---|---|
| Warrior field | 3,260 |
| Cahaba " | 950 |
| Total | 4,210 |

**The Production of Coke** on the line of the Pennsylvania Railway and branches, as per report for the week ending May 30:

Ton of 2000 lb.

| | Week. Tons. | Year. Tons. |
|---|---|---|
| Tyrone and Clearfield | .. | 212 |
| Allegheny Region, Penn. R.R. | .... | 46 |
| West Penn. R.R. | 410 | 25,733 |
| Southwest Penn. R.R. | 3,446 | 161,860 |
| Gas Coal, Penn. R.R. | 130 | 16,610 |
| Pittsburgh Coal, Penn. R.R. | 293 | 3,926 |

### Chesapeake and Ohio Railroad.

*Kanawha Region.*

Coal received from mines for week ending May 30, 1874:

Ton of 2000 lb.

| | WEEK. Tons. | YEAR. Tons. |
|---|---|---|
| Cannel Coal | 500 | 5,980 |
| Splint " | 2,890 | 20,430 |
| Bituminous Coal | 50 | 2,615 |
| Total | 3,440 | 29,025 |

### Pictou Region, Nova Scotia.

Coal mined for the week ending May 30, 1874.

| DESTINATION. | WEEK. | YEAR. |
|---|---|---|
| United States | 963 | 5,570 |
| West Indies | .... | 1,150 |
| Canada | 4,429 | 12,944 |
| Other provinces | 2,076 | 11,928 |
| | 7,468 | 31,592 |

Our table of production gives for the week 434,403 tons, as against 500,941 tons for the previous week, and 436,276 tons for the corresponding week last year. The total production

for the year is 7,770,903 tons, as against 7,357,593 tons for the corresponding period of 1873. These figures show a decrease for the week this year of 1873 tons, and an increase for the year of 413,310 tons The figures of last year we take from the Pottsville *Miner's Journal*.

The receipts at Port Richmond were 62,000 tons; shipments, 53,000 tons; balance on hand, 119,000 tons.

The receipts at Greenwich, Philadelphia, were: bituminous, 3791 tons, and gas coals, 4821 tons; shipments: bituminous, 3345 tons, and gas coals, 6137 tons; balance on hand: bituminous, 2135 tons, and gas coals, 1038 tons.

The production of Cumberland coal from January 1 to June 6, inclusive, was 835,515 tons, of 2240 lb., as compared with 904,211 tons for the corresponding time last year. The production for the week was 56,296 tons, as compared with 52,416 tons for the corresponding week in 1873. This shows an increase of 3880 tons for the week, and a decrease of 68,696 tons for the year.

The Delaware and Hudson Canal Co. has in stock, at Rondout, 45,000 tons; at Honesdale, 430,000 tons; and at Weehawken, 15,000 tons.

***Anthracite Coal.***—The middlemen realize no improvement in trade, and think it difficult to say that it is getting worse. Some of the large companies are furnishing all their coal to contractors, while at least one of them has been compelled to search three or four days for customers for single cargoes.

We are informed, from several quarters, that concessions in prices are being made to a great extent, but we are unable to procure any real evidence of it. There has been considerable competition and cutting of prices in the retail yards of Boston, by several of the combined companies, very much to the injury of their customers in the same business, who are paying programme prices. The excuse for this is that a misunderstanding exists, which is likely to meet with an early adjustment. It is thought this can have no effect upon the general workings of the combination, but it is certainly breaking faith with the trade.

Our Detroit correspondents advise us of a reduction of 50c. per ton on anthracite by the retail yards. Our St. Louis correspondent informs us that the introduction of a semi-anthracite coal ("Spadra") from Arkansas, has lowered the price of anthracite in that market.

Vessels are in great abundance and rates of freight are lower. We learn of charters to Boston as low as $1 45 for a 750 ton vessel, and $1 50 for a 250 ton vessel. The regular quotations to-day are $1 50@1 65. Freights to Montreal by canal are up a little, being quoted at $3 25@3 50, gold. Freights to other points on the canal remain the same.

***Wholesale Prices of Anthracite f.o.b., at the Tide Water Shipping Ports per ton of 2240 lb.***

| | Lump. | Steamer. | Grate. | Egg. | Stove. | Chestnut. |
|---|---|---|---|---|---|---|
| **Wyoming Coals.** | | | | | | |
| *Lackawanna and Scranton at E'port & Hoboken | 4 80 | 4 90 | 5 00 | 5 15 | 5 65 | 4 60 |
| Pittston at Newburgh | 4 65 | 4 65 | 4 75 | 4 85 | 5 40 | 4 50 |
| Wilkesbarre at Port Johnston | 4 80 | 4 90 | 5 00 | 5 15 | 5 65 | 4 60 |
| Newport and Plymouth | .... | .... | 5 00 | 5 15 | 5 85 | 4 60 |
| Susquehanna Coal Co. at Amboy | 4 95 | 5 05 | 5 10 | 5 25 | 5 75 | 4 70 |
| Kingston at Hoboken | 4 80 | 4 90 | 5 00 | 5 15 | 5 65 | 4 60 |
| **Lehigh Coals.** | | | | | | |
| Old Company at Port Johnston | 5 75 | .... | 5 70 | 5 70 | 5 60 | 4 60 |
| Old Company's Room Run | 5 20 | .... | 5 20 | 5 25 | 5 85 | 4 90 |
| Sugar Loaf at Port Johnston | 5 75 | ... | 5 70 | 5 70 | 5 70 | 4 75 |
| Lehigh Coal Exchange | 5 60 | .... | 5 55 | 5 55 | 5 70 | 4 75 |
| Honey Brook at Elizabethport | 5 60 | .... | 5 55 | 5 55 | 5 70 | 4 65 |
| Spring Mt. C. Co. at Hoboken | 5 60 | 5 60 | 5 55 | 5 55 | 5 85 | 4 90 |
| Beaver Meadow at South Amboy | 5 75 | .... | 5 70 | 5 70 | 5 70 | 4 75 |
| McNeal at Port Johnston | 5 60 | 5 60 | 5 65 | 5 55 | 5 60 | 3 75 |
| **Schuylkill Coals at Port Richmond.** | | | | | | |
| Schuylkill white ash | 4 30 | 4 40 | 4 50 | 4 65 | 5 15 | 3 75 |
| Schuylkill red ash | ... | .... | 4 65 | 4 80 | 5 15 | 4 00 |
| Shamokin white and red ash | .... | ... | 4 75 | 5 10 | 5 15 | 4 20 |
| N. Franklin | .... | ... | 5 10 | 5 10 | 5 30 | 4 00 |
| Lorberry | .... | .... | 5 25 | 5 25 | 6 05 | 4 10 |
| Lykens Valley | .... | .... | .... | 6 00 | 5 85 | 4 70 |

* f. o. b. in New York Harbor.

† These prices are for registered contracts. Buyers not having contracts will be charged 15 cents per ton more than above prices.

Lehigh Pea is quoted at $3.95.

Per ton

Freight from Hoboken and Weehawken to New York..... 40c.
" " Elizabethport & Port Johnston, to New York. 45c.
" " South Amboy to New York..... 50c.
" " Newburgh to New York..... 05c.
" " Port Richmond, "Phila." to N. Y. alongside 95c.
" " Rondout to New York by boat or barges of the D. & H. Canal Co. "delivered"..... 50c.

***Retail Prices.***

per 2000 lb. are as follows:

| | Grate and Egg. | Stove. | Chestnut. |
|---|---|---|---|
| Pittston coal, in yard | $5 90 | $6 10 | $5 30 |
| Delaware & Hudson, in yard | 6 25 | 6 50 | 5 70 |
| Scranton, in yard | 7 00 | 7 25 | 6 55 |
| Wilkes-Barre, delivered | 6 85 | 7 10 | 6 75 |
| Lehigh & Locust Mountain | 7 25 | 7 75 | 6 53 |
| Schuylkill Red Ash | 8 00 | | |

***Programme Prices of Schuylkill, Lackawanna, Wilkes-Barre and Lehigh Coals at the New York Shipping Ports.***

| 1874. | | Lump. | Str'm. | Grate or broken. | E. g. | Stove. | Chestnut. |
|---|---|---|---|---|---|---|---|
| March | Wilkes-Barre, Lackawanna, and Schuylkill. | 4·55 | 4·65 | 4·75 | 4·90 | 5·30 | 4·35 |
| | Lehigh Coal Exchange. | 5·35 | | 5·30 | 5·30 | | 4·50 |
| April | Wilkes-Barre, Lackawanna, and Schuylkill. | 4·60 | 4·70 | 4·80 | 4·95 | 5·35 | 4·40 |
| | Lehigh Coal Exchange. | 5 40 | 4 70 | 5·35 | 5·35 | 5·40 | 4·55 |
| May | Wilkes-Barre, Lackawanna, and Schuylkill. | 4·70 | 4·80 | 4·90 | 5·05 | 5·50 | 4·55 |
| | Lehigh Coal Exchange. | 5·50 | 4·80 | 5·45 | 5·05 | 5·60 | 4·65 |
| June | Wilkes-Barre, Lackawanna, and Schuylkill. | 4·80 | 4·90 | 5·00 | 5·15 | 5·65 | 4·75 |
| | Lehigh Coal Exchange. | 5·60 | 4·90 | 5·55 | 5·55 | 5·70 | 4·75 |
| July | Wilkes-Barre, Lackawanna, and Schuylkill. | 4·95 | 5·05 | 5·15 | 5·15 | 5·70 | 4·75 |
| | Lehigh Coal Exchange. | 5·75 | 5·05 | 5·70 | 5·55 | 5·85 | 4·90 |
| August | Wilkes-Barre, Lackawanna, and Schuylkill. | 5·10 | 5·20 | 5·30 | 5·45 | 5·30 | 4·90 |
| | Lehigh Coal Exchange. | 5·90 | 5·30 | 5·85 | 5·70 | 5·85 | 5·05 |
| September | Wilkes-Barre, Lackawanna, and Schuylkill. | 5·25 | 5·35 | 5·45 | 5·60 | 5·90 | 4·75 |
| | Lehigh Coal Exchange. | 6·05 | 5·35 | 6·00 | 6·00 | 6·05 | 4·90 |
| October | Wilkes-Barre, Lackawanna, and Schuylkill. | 5·40 | 5·50 | 5·60 | 5·75 | 6·20 | 5·05 |
| | Lehigh Coal Exchange. | 6·20 | 5·50 | 6·15 | 6·15 | 6·30 | 5·20 |
| November | Wilkes-Barre, Lackawanna, and Schuylkill. | 5·55 | 5·65 | 5·75 | 5·90 | 6·35 | 5·35 |
| | Lehigh Coal Exchange. | 6·35 | 5·65 | 6·30 | 6·30 | 6·45 | 5·50 |
| Average, 1874 | | 4·99 | 5·09 | 5·09 | 5·34 | 5·79 | 4·79 |
| Season contracts | | 4·70 | 4·80 | 4·90 | 5·05 | 5·99 | 4·50 |
| Scranton Sale, May 27 | | 5·79 | | 5·74 | 5·74 | | 4·94 |

***Bituminous Coal.***—There are very few fresh orders at Baltimore and Georgetown, and shipments are almost entirely confined to contracts made some time since. The dullness of trade is felt to a much greater extent in the bituminous business than in the anthracite; and with the prevailing low prices, but small profits, if any, are anticipated by the majority of the companies for this year's work. The quotations to-day, at Georgetown, are $4 35@4 50. The former figure, however, will leave—less freight, shipping expenses, &c.—about $1 50 per ton at the mines, which, with intelligent and economical working, should give some profit. There has been a decline of 10c. in freights on the Chesapeake and Ohio Canal, making the rate from Cumberland to Georgetown $1 25. This, of course, is in favor of the producer. Contractors show an inclination to delay shipments, which indicates that they may not want the amount they had anticipated. Vessels are in great abundance at both Baltimore and Georgetown, and freights are ruling lower. Rates to Boston may be quoted at $2 15@2 35, with a corresponding decline to nearly all other points. In the presence of the prevailing low rates of freight, captains threaten to tie up their vessels, but we have been unable to learn of any doing so as yet.

We note sales of 2000 tons Vale coal for shipment to Cuba, at $3 per ton, gold, f. o. b. at Pictou, N. S., and 2000 tons Red Bank Orrell, for delivery in Canada for gas purposes, at $5, at Buffalo.

***Wholesale Prices, f. o. b., at New York.***

Per ton of 2000 lb.

| | | | |
|---|---|---|---|
| Broad Top | 6 00@$6 25 | Block House | 6 00 |
| Derby | 6 25 | Ohio Caking | 10 00 |
| Kittaning | 6 25 | Ohio Cannel | 12 50 |
| Clearfield, Sterling | 6 25 | Lyonsdale Coal | 11 50 |
| George's Creek, Cumberland | 6 50@6 75 | James River Bit | 6 50 |
| West Virginia Gas | 7 40@7 50 | " Carb | 9 00 |
| Peytona Cannel | 12 50 | *Cannelton Cannel | 12 50 |
| Penn. Gas | 7 65 | Liverpool Gas Cannel, ex ship | 15 00@15 50 |
| Westmoreland Gas | 7 65 | " House | 18 00 |
| Sterling Cannel | 14 00 | ‡Newcastle Gas | 8 00 |
| " " del'v'd. | 16 00 | Red Bank Cannel | 9 50 |
| Caledonia | 6 00 | †Cannelton Splint | 8 00 |
| Waverly Co. Youghiog'y | 7 50 | | |

Freight from Richmond, Va., to New York, $2 25.
* $11 f. o. b. at Richmond.
† $6 " "
‡ Delivered at wharf.

***Retail Prices in New York.***

Per ton of 2000 lb.

| | |
|---|---|
| Liverpool House Orrel | $20 00@22 00 |
| Liverpool House Cannel | ....@25 00 |
| American Block | 16 00@ .... |
| Straitsville Cannel | 16 00@ .... |
| Carbonite | 11 00@ .... |

PRICES IN GOLD F.O.B. AT THE SHIPPING PORTS OF THE MINES.

| | Coarse. | Slack. | | Coarse. | Slack. |
|---|---|---|---|---|---|
| Block House | $2 25 | $1 25 | Sydney, Reserve mine | 2 60 | .... |
| Gowrie | 2 00 | 1 50 | Lingan | 2 50 | .... |
| Pictou, Albion mine | 3 00 | 1 50 | Caledonia | 2 00 | 1 00 |
| Pictou, Vale m. | 3 00 | .... | Glace Bay | 2 00 | 1 00 |

Freights from Cape Breton to New York, $2 75.

## Coal Trade of Philadelphia.

PHILADELPHIA, June 9.

Reported by our Special Correspondents.

***Anthracite.***—No wonder that your Boston correspondent should be perplexed. The anthracite coal trade is working through one of those problems which is far from being solved—deceit is one of the means employed to strengthen the combination, and when the weapon is used freely amongst the deceivers themselves, some unforeseen results are attained When the Boston dealers were promised, in the midst of a feast of champagne and lobster salad got up for their benefit, that they would be protected, not many of them would believe that the very parties making those promises were laying plans to destroy their business. The experience of the Philadelphia dealers was not availed of. The consequence is that, at present, coal is offered by retail in both cities by some of the companies, for less than they charge to the dealers for the same coal at wholesale. The companies abstaining from this foolish policy must do the same or protect their customers, and in either case a ray of competition—the light of trade—will appear, and there may be some hope after all for the future of the anthracite coal trade.

In the Schuylkill Region the short supply of cars at the collieries exceeds any former experience in that line of that unfortunate district. No colliery can be worked at a profit except the few belonging to the R. R. Co. which are kept in full blast, while most of the other collieries are idle. The majority of Schuylkill Co. operators never looked to making money by any natural means; freshet, fire, war, suspensions. etc., etc.—any calamity, misfortune, or embarassment, which would depress, cripple, hurt or kill somebody else or create some excitement—have been their dependence for profit in a trade which is the source of all industries. Finally, they have prostrated themselves at the feet of an arbitrary power, and are reaping the benefits of it. It is too late for them to complain.

We have no change to report in freights or prices of coal.

***Bituminous Coal, Wholesale.***

| | |
|---|---|
| Penn. and Westmoreland (Gas), f.o.b., Greenwich | 6 25 |
| Broad Top, (according to destination,) f. o. b., Port Richmond | 4 75@5 00 |
| Clearfield f. o. b. at Greenwich, according to destination | 4 75@5 00 |

***Bituminous, Retail.***

$6.00 in yard, per 2240 lb., cartage added.

All bituminous coal shipped from wharves is sold per ton of 2240 lb. Coal sold in the railroad cars is all per ton of 2000 lb., R. R. freights being 50 charged.

Clearfield and Broad Top coal may be quoted in cars at mines for coal trade at $1 25 per 2000 lb.

## Explosion and Fire at Nanticoke.

On Sunday night, as the 11 o'clock shift at No 2 shaft, Nanticoke, was about to descend the shaft, one of the men had just put a fresh cotton wick in his lamp and threw the old one, still lighted, down the shaft, when it ignited the gas below, causing an explosion, burning three of the men badly and setting fire to the head-house. The engine and boiler room, only a few yards distant, were saved by the indefatigable efforts of the miners. Some men were put to work clearing away the debris, and while doing so some of the burning structure fell down upon and killed instantly WILLIAM VIVIAN, a single man, and one much respected by his community.—*The Wilkes-Barre Record of the Times.*

A later account states that only the hoisting apparatus was destroyed, there being no breaker attached yet.

MR. TILLINGHAST, Treasurer of the Lehigh and Wilkes-Barre Coal Co., has succeeded in placing in England bonds of the company, endorsed by the Central Railroad of New Jersey, to the amount of $10,000 000.

***Line Prices for June, 1874.***

***Wholesale—Per ton of 2240 lb.***

| AT | Lump and Broken. | Egg. | Stove. | Chestnut. | Pea. |
|---|---|---|---|---|---|
| Carbondale, Pa | 2 25 | 2 25 | 2 50 | 2 00 | 1 25 |
| Fair Haven, N. Y. | 5 50 | 5 50 | 5 95 | 5 45 | .... |
| Ithaca, N. Y | 4 40 | 4 40 | 4 85 | 4 35 | .... |
| Mauch Chunk, Lehigh coal | 3 35 | 3 35 | 3 60 | 3 10 | .... |
| " Newport coal | 1 25 | 3 25 | 3 25 | 3 60 | 3 10 |
| " Wilkes B. coal | 3 25 | 3 35 | 3 65 | 3 10 | .... |
| Oswego and Buffalo, N. Y. | 5 50 | 5 50 | 5 90 | 5 45 | .... |
| Pittston Junction | 2 50 | 2 25 | 2 50 | 2 25 | 1 25 |
| Port Carbon | 2 75 | 3 00 | 3 15 | 2 40 | 1 44 |
| *Port Clinton | 2 94 | 3 19 | 3 34 | 2 59 | 1 33 |
| †Schuylkill Haven | 2 94 | 3 08 | 3 23 | 2 48 | 1 25 |
| Syracuse, N.Y. | 4 55 | 4 50 | 4 95 | 4 20 | .... |
| Scranton | 2 25 | 2 25 | 2 50 | .... | 1 25 |
| Wilkes-Barre | 2 25 | 2 25 | 2 50 | 2 00 | .... |
| Waverly, N. Y | 4 00 | 4 00 | 4 40 | 4 15 | .... |

Lehigh furnace lump remains at $3 25, at Mauch Chunk, without commission.
† By Railroad and Canal.
* By Canal.

## Georgetown, D. C., and Alexandria, Va.

George's Creek and Cumberland f.o.b. $4 35@$4 50, wholesale.

## Baltimore, Md.

Specially reported by E. STABLER, Jr., coal merchant.

WHOLESALE PRICES PER 2240 lb.

ANTHRACITE.

| | afloat. | at depot. |
|---|---|---|
| *Wilkes-Barre, "Lee," or "Diamond,"* | | |
| Lump, steamboat or broken | $5 05@$5 10 | $5 60 |
| Egg | 5 45 | 5 90 |
| Stove | 5 57 | 5 90 |
| *Pittston and Plymouth.* | | |
| Lump, steamboat, and broken | .... | 5 35 |
| Egg and stove | .... | 5 65 |
| "Boston" (free burning,) all sizes | 5 45 | 5 65 |
| Shamokin, red or white ash, all sizes | 5 45@5 60 | 5 50@5 60 |
| Lykens Valley, red ash, all sizes | 5 50 | 5 80 |

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, $7@8 00.

BITUMINOUS.

| | |
|---|---|
| George's Creek and Cumberland f. o. b. at Locust Point for cargoes | 4 60@4 85 |
| West Va. Gas Coal f. o. b. at Locust Point | 5 50@.... |
| Kanawha Cannel, coarse | 13 00@.... |
| Tyrone | 7 25@.... |
| Ritchie Mineral of West Virginia | 1 00@.... |

### Boston.

June 8, 1874.

Reported by our Special Correspondent.

Receipts Friday, Saturday, and to-day were heavy—mainly on contracts made earlier in the season. Cargo sales are very dull.

Receipts of coal at this Port for the week ending June 5 :

| | Week. Tons. | Year. Tons. |
|---|---|---|
| Domestic | 24,573 | 249,588 |
| Foreign | 1,952 | 5,739 |

CARGO PRICES TO TRADE.

| | | | |
|---|---|---|---|
| Lingan coal | $ 6 37 | Westmoreland | 8 50 |
| Caledonia | 6 00 | WarelyCo. Youghiogheny | 8 50 |
| Picton | $6 75@ 7 00 | Cannelton Cannel | 14 00 |
| Block House | 6 25 | Cumberland | 7 00@ 7 25 |
| Red Bank Cannel | 11 00 | Anthracite | 6 25@ 7 50 |

### Burlington, Iowa.

June 6, 1874.

Specially reported by Messrs. WIGHTMAN & CUMMINGS wholesale and retail dealers and shippers of coal.

There has been but little doing, and few changes since our last report. Stocks in yards are small and prices continue steady. We quote :

Per ton of 2000 lb.

| | | | |
|---|---|---|---|
| Lehigh Lump | $16 00 | Illinois Smithy | $6 00 |
| " prepared | 13 00 | " Steam | 3 75 |
| Blosburg Smithy | 13 00 | Connellsville Coke | 13 00 |
| Pittsburgh " | 10 00 | Illinois " | 10 00 |

### Buffalo, N. Y.

Reported by our Special Correspondent.

June 9, 1874.

Per ton of 2000 lb.

| | | | |
|---|---|---|---|
| Youghiogheny Gas Coal | $6 00 | Connellsville coke | 8 00 |
| Catfish Lump | 4 75 | Beaver Gas Coal | 6 50 |
| " Nut | 3 50 | Red Bank Cannel | 5 50 |
| " Nut and Slack | 3 00 | " Orrel | 5 00 |
| " Slack | 2 85 | | |

Anthracite f. o. b. vessel. Retail prices $1 per ton additional, delivered.

| | | | |
|---|---|---|---|
| Lump | $6 50 | Stove | 6 45 |
| Grate | 6 00 | Chestnut | 5 95 |
| Egg | 6 00 | | |

### Chicago, Ill.

June 8, 1874.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

No change in prices of coal.

Retail prices per ton of 2000 lb. delivered to buyer.

| | | | |
|---|---|---|---|
| Lehigh Lump | $10 50 | Walnut Hill (W. Va) | 6 50@ .... |
| Lehigh prepared | 10 00 | Midway (West Va.) | 6 50@ .... |
| Lackawanna, Wilkes-Barre and Pittston, | | Cannel | 8 00@ 9 00 |
| Grate, egg, and chest | 8 50 | Blossburg | 8 50 |
| Stove or range | 9 00 | Indiana Block | 6 50 |
| BITUMINOUS. | | Hocking "Brooks" | 6 50 |
| Briar Hill and Erie | 7 50@ .... | Wilmington and Illinois | 5 00 |

### Cincinnati, O.

June 10, 1874.

Specially reported by Messrs. A. BUCHANAN & Co., wholesale and retail dealers in coal and coke.

Please continue quotations same as last week. We have a report from two of the principal coal measurers of the amount of coal measured by them from January 1 to June 1 1874, 5 months, viz., I and A. L. Baker, 7,081,709 bushels, and D. B. Shutterly 7,170,000 bushels. Trade here is exceedingly dull.

Per ton of 2000 lb.

| | Bush. | Tons. |
|---|---|---|
| Youghiogheny, or Pittsburgh, afloat | 10 c. | $2 80 |
| Pomeroy coal | 6c.@7 c. | 1 96 |
| Cannel coal | 18 c. | 5 04 |
| Semi Cannel | 9 c. | 2 52 |

The following are retail prices delivered :

| | | |
|---|---|---|
| Youghiogheny | 13 c.@ | $3 64@$ |
| Pomeroy | 11 c.@ | 3 08@ |
| Cannel | 22 c.@ | 6 16@ 6 72 |
| Kanawha Semi Cannel | — 13 c. | — — 3 64 |
| Anthracite | — — | — — 11 00 |
| Foundry coke | — 11c. | — — |
| Soft coke | — 9c. | — — |

### Cleveland, O.

June 8, 1874.

Reported by our Special Correspondent.

No change in prices, coal market very dull. Supply greatly exceeds demand. Shipments via lake would undoubtedly cease entirely were it not for the very low rates of freight offering.

Per ton of 2000 lb.

| | | | |
|---|---|---|---|
| Youghiogheny, l'p, f.o.b. | $4 75 | Straitsville | $3 50 |
| Youghiogheny, nut | 3 75 | Columbiana | 3 75 |
| Briar Hill, (Church Hill) | 4 65 | Strip Vein | 4 00 |
| " " (Brookfield) | 4 50 | Mountain Blossburg (blacksmith) | 6 00 |
| Massilon, according to quality | $3 75 to 4 00 | Darlington and Sterling Cannel | 4 60 |
| Hocking Valley | 3 75 | | |

### Council Bluffs, Iowa.

Reported by our Special Correspondent.

Per ton of 2000 lb.

ON TRACK.

| | | | |
|---|---|---|---|
| Blossburg (blacksmith) | $14 00 | Wyoming | 13 00 |
| Anthracite | 14 00 | Missouri | 6 00 |
| Iowa | 4 50 | Kansas | 6 00 |

RETAIL.

| | | | |
|---|---|---|---|
| Blossburg | $16 00 | Wyoming | $15 00 |
| Anthracite | 16 00 | Missouri | 8 00 |
| Iowa | 6 50 | Kansas | 8 00 |

### Detroit, Mich.

June 9, 1874.

Specially reported by Messrs. ROBINSON & KEYS, dealers in all kinds of coal.

Prices are not quite as steady as they have been. Some dealers are making concessions of 50 c. on anthracite, anticipating the opening price, which will probably be $9. Trade is quiet, and but little coal has arrived at this port the last week

Per ton of 2000 lb.

| | | | |
|---|---|---|---|
| Lehigh Lump, per ton. | $11 00 | Briar Hill | 8 50 |
| Lehigh nut | 10 00 | Willow Bank | 8 00 |
| Wilkes-Barre, prep. sizes | 9 50 | Erie | 8 75 |
| Blossburg | 9 00 | Massillon | 8 00 |

### Denver, Col.

RETAIL PRICES.

Per ton of 2000 lb.

| | | | |
|---|---|---|---|
| Canon | $6 50 | Boulder Valley | $4 75 |
| Marshall | 5 50 | Euiner | 5 50 |
| Murphy | 5 50 | Black Diamond | 5 50 |
| Baker | 5 00 | | |

### Indianapolis, Ind.

June 6, 1874.

Specially reported by Messrs. H. McCOY & Co.

No change in the price of coal since last report. The lowest figures having been reached, no change can be expected until trade revives, which will not be for sixty days at least.

We quote at wholesale prices on board cars in the city :

Per ton of 2000 lb.

BITUMINOUS.

| | | | |
|---|---|---|---|
| Best Block coal | $2 80 | Indianna cannel | 6 50 |
| Best Highland | 2 25 | Hocking Valley | 3 00 |
| Block Nut | 1 65 | Youghiogheny | 4 75 |
| Highland " | 1 65 | Gas coke, per bushel | 12c |
| Block slack | 1 15 | Blossburg (smithing) " | 27 |
| Peytona cannel | 8 50 | Piedmont " " | 30 |

ANTHRACITE (Lackawanna).

| | | | |
|---|---|---|---|
| Grate | $9 25 | Chestnut | 9 30 |
| Egg | 9 25 | Stove | 9 55 |

### Louisville, Ky.

June 8, 1874.

Specially Reported by Messrs. BYRNE & SPEED.

Market is dull, about 400 tons Kentucky coal standing in cars.

| | |
|---|---|
| Pittsburgh, per load | $3 50 |
| Pomeroy | 2 75 |
| Buckeye Cannel | 5 50 |
| Peytona Cannel | 6 00 |
| Nut and Slack | 2 75 |
| City-made Coke, per bushel | 22c |
| Anthracitb, per ton | $10 to $10 50 |

### New Orleans, La.

June 6, 1874.

Specially reported by Messrs. P. & R. DEVERGES, Wholesale and Retail Dealers in Pittsburgh, Anthracite and Cannel coal.

Market lively and demand very brisk at wholesale. The stock at Willow Grove Landing, afloat on the 1st of this month, was 264 boats and 25 barges.

Arrived during May, 75 boats, 14 barges.

Consumption during May, 21 boats, 4 barges.

We quote:

| | |
|---|---|
| Pittsburgh coal, retail, per bbl | nominal. |
| " wholesale | 37½c.@40 |
| " per hhd | $7 00 |
| " to steamboats, per box | 50c. |
| " to manufacturers, per bbl | 60c. |
| Anthracite, retail, per ton | $12 50 |
| " wholesale per ton | $ 8 50@9 00 |
| Spadra (Arkansas) coal, retail, per bbl | 75c. |

### Pittsburgh, Pa.

June 8, 1874.

Reported by our Special Correspondent.

Coal and coke trade still very dull. River mines generally suspended. Prices unchanged.

Per ton of 2000 lb. and Bushel of 76 lb.

| | per ton. | | per ton |
|---|---|---|---|
| Youghiogheny coal | $2 25 | Anthracite all sizes | $7 00 |
| " coke | 2 75 | Castle Shannon coal on | |
| Connellsville coal | 2 25 | platform, per bushel | 7½c. |
| " coke | 3 25 | | |

### San Francisco.

From the *Commercial Herald* May 28.

Imports of coal from January 1st to May 23d :

| | Tons. | | Tons. |
|---|---|---|---|
| Anthracite | 1,952 | Vancouver Island | 24.729 |
| Australian | 21,506 | Bellingham Bay | 8,110 |
| Coos Bay | 21,718 | Rocky Mountain | 303 |
| Cumberland | 4,820 | Seattle | 984 |
| English | 1,005 | Mt. Diablo (3 mos) | 54.740 |

### St. Louis, Mo.

June 4, 1874.

Specially Reported by the COLLINSVILLE COAL AND MINING COMPANY.

A very peculiar coal from Arkansas, called by the parties introducing it "semi-anthracite," is offered in this market as a competitor for the custom heretofore using the Pennsylvania anthracite, the immediate result being a reduction in anthracite quotations.

ANTHRACITE.

Per ton of 2000 lb.

| | City delivery. |
|---|---|
| Lehigh Lump | $14 50 |
| Lackawanna and Wilkesbarre | 13 50 |
| Semi Anthracite | 9 50 |

BITUMINOUS.

Per ton of 2000 lb.

| | E. St. Louis. | City delivery |
|---|---|---|
| Washington Indiana—smithing | $4 00 | $4 87 |
| O'Fallon, Ills | 2 00 | 3 00 |
| Collinsville and Belleville, Ills | 1 75 | 2 75 |
| Indiana Cannel | 6 00 | 7 00 |
| Missouri Cannel | | 5 00 |

Retail, 25c. per ton additional.

### Toledo, Ohio.

Per ton of 2000 lb.

| | | | |
|---|---|---|---|
| Scranton, all sizes | $9 00 | Briar Hill | 6 00 |
| Lehigh Lump | 11 00 | Bituminous | 4 50@6 50 |
| Blossburg | 8 50@ 9 00 | | |

### Halifax, N. S.

June 8, 1874.

Reported by our Special Correspondent.

Owing to the severe depression in the coal trade this season the Cape Breton Company have stopped working their reserve mines. They have 150,000 tons of coal on the bank.

Prices per ton of 2240 lb. in gold.

| | | | |
|---|---|---|---|
| Sydney (old mines) | $7 75 | Little Glace Bay | 7 50 |
| Other Sydney coals | 7 00 | Albion (at railroad) | 7 50 |
| Gowrie | 7 50 | | |

### Toronto, Ont.

Prices in gold, per ton of 2000 lb.

| | | | |
|---|---|---|---|
| Scranton, all sizes | $7 50 | Bituminous | 7 50 |
| Lehigh prepared | 8 50 | Blossburg | 7 00 |
| " Lump | 9 00 | | |

### *Towing.*

Per ton of 2240 lb.

FROM NEW YORK TO POINTS ON THE HUDSON RIVER.

| | per ton. | | per ton. |
|---|---|---|---|
| Manhattanville | 8 c. | Haverstraw | 17 c. |
| Spuyten Duyvel | 9 " | Verplanck's Point | 17 " |
| Yonkers | 10 " | Peekskill & Newburg | 18 " |
| Hastings | 11 " | West Point & Cold Sp'g | 20 " |
| Piermont & Dobbs Ferry | 13 " | Poughkeepsie | 22 " |
| Nyack & Tarrytown | 15 " | Rondout | 23 " |
| Sing Sing | 16 " | Hudson | 25 " |
| Croton Landing | 17 " | | |

Boats of 100 tons and under—per boat.

| | | | |
|---|---|---|---|
| Manhattanville | $11 00 | Spuyten Duyvel | $13 00 |
| Yonkers | 15 00 | Tarrytown | 18 00 |
| Sing Sing | 20 00 | Peekskill | 20,00 |
| Newburgh | 25 00 | Poughkeepsie | 30 00 |

ON LONG ISLAND SOUND.

| | per ton. | | per boat. |
|---|---|---|---|
| Norwalk & Bridgeport | 33⅓ c. | Port Morris | $20 00 |
| New Haven | 33⅓ " | West Farms, mouth of Creek | 25 00 |
| Derby ($50 per b't extra) | 33⅓ " | West Farms | 35 00 |
| Southport & Westport | 40 " | West Chester | 30 00 |
| Milford | 40 " | College Point | 25 00 |
| Branford | 45 " | Flushing & White Stone. | 30 00 |
| New London | 60 " | East Chester Town Dock | 60 00 |
| Middletown | 65 " | New Rochelle & Glen Cove | 50 00 |
| Norwich | 68 " | Mamaroneck & Port Chester | 70 00 |
| Hartford & Stonington | 75 " | Greenwich, Stamford & Darien | 75 00 |
| Mystic | 75 " | | |
| | per boat | | |
| Harlem | $18 00 | | |
| Mott Haven | 18 00 | | |

### Harbor Towing

From Hoboken to

| | Loaded. | Light. |
|---|---|---|
| 53d st., towing limits per boat | $6 00 | $5 00—$11 00 |
| Gowanus " " | 6 00 | 6 00— 14 00 |
| Newtown Creek " " | 10 00 | 9 00— 19 00 |
| Port Johnston " " | 9 00 | 9 00— 16 00 |
| 130th street, North River " | .... | ....— 18 00 |
| From East River to Weehawken and return to East River | 9 00 | 7 00— 16 00 |

To 61st st., $12 extra; to 79th st., $14 extra; to 93d st., $16 extra.

### Freight on Pittston Coal—From Newburgh.

By boats of the Pennsylvania Coal Co., per ton of 2240 lb.

| | |
|---|---|
| To Troy, Albany and Stuyvesant | 60 c. |
| " Nyack and Hudson and Boston R.R. dock, Hudson, discharged to cars | 50 c. |
| " Hudson, except a above, Rondout and Poughkeepsie | 35 c. |
| " Catskill, at mouth of creek, Sing Sing, Tarrytown, Piermont, and Yonkers | 55 c. |
| " Fishkill Landing and West Point | 25 c. |
| " Peekskill, Haverstraw, Saugerties, and Tarrytown | 45 c. |
| " New York | 65 c. |

## Freights to River and Sound Ports.

There is so little doing in freights that quotations are scarcely changed as compared with our last. Vessels have been taken from Elizabethport to Boston at $1 50 per ton, and, no doubt, this figure would be generally accepted, under the present condition of trade.

Baltimore and Georgetown freights also rule lower. Reference, however, our last issue will indicate pretty nearly the present tone of the market.

## Coal Freights from the Anthracite Mines to the Principal Markets.

There are no important changes in these freights. We refer to our last issue any one desirous of consulting the same.

## Freights on Bituminous Coals from the Mines to Tide Water Shipping Ports.

*From the Mines to Cumberland and State Line* the charge is 3 cents per ton of 2240 lb. per mile.

*From Cumberland to Baltimore*, $2 58 per ton of 2240 lb., or $2 30 per net ton.

*From State Line to Amboy*, $4 00 per ton of 2000 lb. On coal shipped beyond that point there is a drawback of 50 cents per net ton.

*From the Mines to Piedmont*, 5 cents per ton of 2240 lb. per mile on distances less than 5 miles, and 4 cents per ton per mile on distances not over 10 miles.

*From Piedmont to Baltimore*, $2 97 per ton of 2240 lb., or $2 65 on net ton.

*From Cumberland to Georgetown* by canal, $1 86 per ton of 2240 lb. *To Alexandria, Va.*, 11 cents per ton more.

*From Cumberland to Baltimore* by B. and O. R. R. per 2000 lb., $2 70 ; 4 cents additional per gross ton for use of cars.

*From any point in the Kanawha Valley to the James River wharves below Richmond* by C. and O. R. R., including terminal charges, per ton of 2000 lb., for Cannel coal, $5 35. Subject to rebate on large quantities.

*Do., do.*, for Semi Cannel or Splint, $3 65.

*From Irwin to W. Phila.* per P. R. R. Penn. and Westmoreland gas coal, per ton of 2000 lb. $5 00

*From Osceola to W. Phila.* per T. & C. R. R., bituminous coal of 2000 lb. 3 35

*From Fairmount and Clarksburg to Baltimore* via B. & O. R. R. including loading, per 2000 lb. 5 20

On through coal after deducting drawback 4 15

*From Richmond, Va., to New York*, per 2000 lb. $2 00@ 2 10

" " " Boston " " " 3 00

" " " Philadelphia " " " 1 75

**Geneva and Ithaca R.R.**

COAL TARIFF.

Per ton of 2240 lb.

| | |
|---|---|
| *Lackawanna Junction to State Line* for local points..... | $2 00 |
| " for Auburn via I. & G. and I. R. R..... | 1 65 |
| " for all other points on N.Y. C. R. R..... | 1 29 |
| Through rate *Lack. Junction to Buffalo* ..... | 3 66 |
| " " " *Rochester*..... ..... | 3 16 |
| " " " *Phillipsburg*..... | 2 92 |

An addition of 10c. on lots of less than 25 tons.

| | |
|---|---|
| *Lackawanna Junction to Erie Junction* for through points on Erie or A. & G. W. R.R. ..... | 1 39 |

## REVIEW OF THE BRITISH COAL AND IRON TRADES.

The following is a review from our exchanges bearing date to May 23d. In the North of England the condition of affairs is very discouraging. The ironstone miners show a strong determination to resist the proposed reduction of wages. They have resolved not to draw on the funds of the Union for a fortnight. A meeting of iron masters is not expected to take place until Tuesday, May 26, and then no expectation exists that they will for a moment depart from the determination they have come to, to enforce the reduction. It looks as though a long and serious lock-out may be anticipated. This belief is certainly strengthened by the fact that a large number of men are moving from the district, which will give strength to those remaining, as there will be less to draw on the funds of the Union. It is expected that another fortnight will see half the blast furnaces stopped on account of a scarcity of ore. Efforts are being made to procure supplies from Northampton and Spain. The stocks of pig iron are becoming very much reduced, and the better classes are scarce. No. 3 is 70/, and has been quoted to 72/ 6d ; No. 1, 80/ ; and No. 4 forge 60/, net cash. There is a superabundance of forge iron as compared with other qualities. Rails are in light demand and are quoted at £8 15/@£9 5/.

The North of England coal trade is very fair, excepting that there is a decrease in the demand for iron manufacturing purposes. Steam and house coals are in fair demand, and steady in price. The demand for coke is only moderate, and prices are tending downward. Best house coals are selling at 15/@16/ ; gas coals, 14/@15/ ; steam coal, 18/ ; and coke at 18/@20/.

The colliers' strike continues in South Staffordshire, and completely disorganizes the industrial affairs of that district. A few non-unionists have resumed work, but the Union men show no sign of giving way. The large consumers of fuel are beginning to experience a scarcity of supplies in some parts of the district, and prices, as a consequence, are a shade firmer ; but considering the large number of important collieries standing idle, the inconvenience felt by consumers is comparatively slight, and a striking indication is thereby afforded of the depressed condition to which the fuel-consuming industries of the district have been reduced. A further number of furnaces have gone out of blast, leaving but 42 in blast, out of 153 built. Common cinder pig is quoted as low as £3 10/ ; but a transaction is just reported in which a lot of 2,000 tons has changed hands at £3 12 6d. All mine iron is £6 10/@£7, and even with the present restricted out-put stocks are in some instances accumulating.

Some local labor troubles exist in various districts. Upon the whole there cannot be noticed any improvement in trade. No. 3 pig iron delivered in the Manchester district ranges from 77/ 6d.@80/, forge qualities at 68@70/. In manufactured iron there is not much doing, as Belgian circulars quote common bars at prices equal to £8 10/, delivered in Hull or Liverpool. The local rates for ordinary home bars delivered in the district are £10@£10 5/. Indian charcoal pigs are quoted at £10 @£11 in London.

At Barnsley, silkstones coal is selling at 14/, and Barnsley seam 10/ 6d.@12/ 6d. In the Wigan district, there is a fair demand in proportion to the supplies, and although in some cases concessions are made to effect sales, the leading firms, as a rule, are adhering to their list prices, which, at the pit's mouth, range about as follows : Pemberton 4 ft., 15/ ; Ince 4 ft., 13/ ; Pemberton 5 ft., 12/ ; burgy, 9/@9/ 6d ; and slack, 7/ 6d.@8/ 6d.

*Wales*.—The crisis in the relations between masters and men appears to be past, and the question is undoubtedly settled, for the time at least, in a satisfactory manner. The associated employers met at Cardiff, a week ago, and agreed to a reduction of 10 per cent. only, not from any feeling that that represented what they were fairly entitled to before trade could be placed upon a safe and healthy foundation, but from an earnest desire to avoid any conflict with the workmen. On Wednesday, the anxiously expected meeting of colliers' delegates commenced at Merthyr, and after a debate of several hours' duration, it was ultimately resolved to accept the 10 per cent., and appoint a deputation to wait upon the employers, and ascertain the probable future wage rate of the men. A large meeting of delegates from each of the South Wales collieries began their congress at Merthyr on Wednesday, May 20th, and at this meeting it is understood it will be finally decided whether a strike on a vast scale shall or shall not be carried out. Mr. CRAWSHAY has published a letter to his men explaining why he had given notice before the other masters, and why he had given the notice of 20 per cent. reduction. He says he has an order for 400 tons of rails which he will accept, provided the men will go to work at the old rate of wages, and upon the completion of this contract both master and man to be free as to working any further. His reason for giving the notice was that he had no orders, and saw no prospect of getting any, and was pleased that the men had struck. He intimated that even at 40 per cent. reduction he would not stock iron.

The prices of coal still continue to decline, and stocks are increasing. The leading colliery proprietors have made a further reduction of 3/ per ton.

*Scotland*.—Advices from Scotland, bearing date of May 20, from Glasgow, report the speculating transactions of the Warrant Market for the week as not so large as for some time past. The range of prices for the week were from 83/ 6d. to 88/, closing at 86/. The production is still much restricted, and iron consequently scarce, but so limited is the demand that although some buyers who must have particular brands are put to inconvenience, no absolute scarcity of ordinary iron has been experienced, and the deliveries ex store have not been excessive. No. 1 g. m. b, is quoted at 87/ 6d., and No. 3 85/ 6d. There are but 72 furnaces in active operation. The shipments of Scotch pig iron for the week ending May 16 were 6465 tons, as compared with 17,493 tons in the corresponding week of 1873, and a decrease of 84,337 tons from Dec. 25. The imports of Middlesbrough pigs into Grangemouth for the week were 2130 tons, as compared with 800 tons in the corresponding week of last year, and showing an increase since Jan. 1st of 24,307 tons.

The miners' strike appears to be larger than at any time since it began, with no indications of a compromise. The colliers of the Coatbridge district have gone on at their own terms—20 per cent. reduction—and about half of the ironmasters' men at a further reduction.

The shipments of coal continue to show a decrease. House coal is quiet, with more doing in steam coal, and parrot neglected. Prices are easier, and buyers have the advantage, especially for good shipments. Fife and Clackmannan colliers are threatening a strike if the employers persist in enforcing the reduction of 1/ per day. Ejectments of miners on strike have been made in various districts, against which they are declaiming.

## IRON MARKET REVIEW.

### Import Duties.

The following are the duties in Gold on Iron :

*Flat Iron*, not less than 1, nor more than 6 inches wide, nor less than 3/8, nor more than 2 inches thick. *Round Iron*, not less than 3/4, nor more than 2 inches in diameter, and *Square Iron*, not less than 1/2, nor more than 2 inches square ₱ lb. 9-10 of 1c.

*Flat Round or Square Iron*, of larger or smaller sizes than the above mentioned, per lb ..... 1 35-1000

*Provided*, that all iron in slabs, blooms, loops, or other forms, less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron does.

*Provided*, that none of the above iron shall pay less than 31½ per cent.

| | |
|---|---|
| *Railroad Iron*.....63c. per 100 lb. | |
| *Boiler plates*, or other plate iron not less than 3-16 of an inch thick, per lb..... | 1 35-100 c. |
| *Scrap castings* per ton..... | $5 40 |
| " *wrought* " " ..... | 7 00 |
| *Pig iron* per ton..... | 6 30 |

*Iron ore* 10 per cent. *ad valorem*.

### New York.

June 12, 1874.

Trade in all branches of the Iron business may be reported as about the same as at the date of our last, with perhaps an inclination, in some cases, to quote lower prices. There are rumors of some Pennsylvania companies being in great need of funds, but we were unable to procure any definite information on the subject. The prices quoted for some good brands would indicate that necessity was compelling a sacrifice. The Thomas Iron Company blew out tuer No. 4 furnace at Hockendauqua, on Wednesday, on account of the men not wishing to work at the reduced wages.

*American Pig*.—There is very little doing, purchases being made only for the most pressing necessities. We note sales of 500 tons Allentown forge at $25, at the works ; about 400 tons No. 1 and No. 2 Thomas, at $32 and $30 respectively ; 200 tons of No. 1 Allentown, at $32 50, and 250 tons of the same brand on private terms. While the stronger companies will not make contracts at the ruling quotations, yet very good irons are offered at $31 for No. 1, and $29 for No. 2, and inferior makes as low as $28 for No. 2, and $30 for No. 1. There was a rumor of a large sale of forge iron at a very low figure, but there was no truth in it. Good forge iron is scarce and more firm than any other article in the iron market. Twenty-five dollars per ton was offered for 1500 tons of good Lehigh forge at the works, but was refused. In fact, that figure would bring out orders for several thousand tons. We quote to-day: No. 1 foundry, $30@$32 50; No. 2, $28@$30 ; and forge @26@$29.

*Scotch Pig*.—The demand for Scotch Pig is not so light as last week, yet it is hardly worthy of mention. We note sales of 150 tons of Coltness at $40 ; 100 tons of Summerlee, 100 tons of Carnbroe, and 200 tons Eglinton on private terms. Both this and the Glasgow markets are bare of Coltness. The latest information by cable gives no change in prices. Our mail advices show that the strike is even worse than at any time since it began, but it is thought the funds of the Union will not outstand the masters. Prices have declined a little in this market. We quote : Eglinton, $33 50@$34 50 ; Carnbroe, $34@$35 ; Summerlee, $36 ; Glengarnock, $36, and Dalmellington $33 50@$34 50. The latter brand is but little known in this market, hence the low quotation. In the Glasgow market it usually stands higher than Eglinton.

*Iron Rails*.—There is nothing doing and no improvement in the inquiries. We are unable to learn of any transactions, and in their absence quote nominally: American, at works, $56@60, currency; and foreign, $52@54. gold, here.

*Bessemer Rails*.—We are unable to learn of any transactions and quote nominally: American, at $98@100, currency, at the mills; and foreign at $95@97 50, gold, here.

*Old Rails*.—There is nothing doing in this branch of business. We understand that the operator holding the majority of the stock in this market is not offering. Quotations are quite nominal.

*Scrap Iron*.—We note the sale of 100 tons car wheels and 230 tons No. 1 wrought, on private terms; $37@38 may be given as yard quotations, but for fair quantities much lower quotations have been given. Cast is quoted at $22@28.

*Spiegeleisen*.—There is nothing doing, and we quote nominally at $55, gold.

### Baltimore,

June 6, 1874

The market for pig is dull, and we learn of no movement beyond small sales for foundry purposes. We quote as follows : Anthracite at $33 per ton for No. 1 ; $32 for No. 2 ; and $29 for No. 3. Baltimore charcoal forge at $43, and Scotch pig, nominally, at $45 from yard.—*American Commercial Advertiser*.

### Boston, Mass.

June 6, 1874.

The Boston *Commercial Bulletin* says: "The market for pig iron is dull, and the sales are confined to small lots. Foundrymen report a slightly improved demand for work, and a better trade in pig iron is looked for. Late advices from abroad note an advance in Scotch pig, and if it is maintained, the imports will be likely to be even smaller than they have been. Refined bar is quiet, and prices are depressed and nominal. We quote: Yard lots of American pig at $36@41 per ton, including No. 2 X at $34@36, and No. 1 at $37@40. We quote Eglinton at $40@42; Coltness at $45@47; and charcoal at $50@60.

### Cleveland

June 9, 1874.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore.

Our prices for pig iron remain about the same as during the last month; demand small. We quote as follows :

| | |
|---|---|
| No. 1, Anthracite Foundry..... | $33 00@34 00—4 mos |
| No. 2, " " ..... | 31 50@32 50—4 mos |
| No. 1, Bituminous " ..... | 33 00@34 00—4 mos |
| No. 2, " " ..... | 31 00@32 00—4 mos |
| No. 1, Grey Forge Bituminous..... | 27 00@28 50—4 mos |
| No, 2, Close Grey..... | 26 00@27 00—4 mos |
| No. 1, Massilon Black Band ..... | 36 00@37 00—4 mos |
| No. B-1 " " ..... | 34 50@35 50 -4 mos |
| No. 2 " " ..... | 33 00@34 00—4 mos |
| No. 1, Lake Superior Charcoal..... | 39 00@40 00—4 mos |
| No. 2, " " ..... | 37 00@39 00—4 mos |
| No. 3, " " ..... | 41 00@43 00—4 mos |
| Nos. 4, 5, 6, " " ..... | 43 00@46 00—4 mos |
| American Scotch..... | 33 50@34 00—4 mos |

### Chicago

June 9, 1874.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

We have no change to report since our last, except in Lake Superior charcoal pig, which quotations may be reduced $1 per ton.

| | |
|---|---|
| No. 1 Coltness..... | $46 00@ .... |
| No. 1 Gartsherrie..... | 45 00@ .... |
| No. 1 Summerlee..... | 44 00@ .... |
| No. 1 Glengarnock ..... | 42 00@ .... |
| No. 1 Eglinton ..... | 38 00@ .... |
| Warner's "American Scotch" ..... | 38 00@ .... |
| No. 1 Grand Tower Mo. ores (Bituminous)..... | 36 00@ .... |
| No. 2, " " " ..... | 32 00@ .... |
| No. 1 Forge ..... | 32 00@ .... |
| Union "A" 1 (Anthracite)..... | 35 00@ .... |
| Union "B" 1 (Anthracite)..... | 32 00@ .... |
| No, 1 Lake Superior (charcoal) ..... | 40 00@41 00 |
| No. 2 Lake Superior " ..... | 37 00@39 00 |
| No. 3 Lake Superior " ..... | 42 00@44 00 |
| No. 4 Lake Superior " ..... | 44 00@47 00 |

### Cincinnati.

June 9, 1874.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

Since our last report our market for pig iron has shown some degree of animation. There has been considerable inquiry, and a few sales of round lots are reported, but generally at very low figures. We quote :

CHARCOAL.

| | |
|---|---|
| Hanging Rock, No. 1, Foundry.....$34 00@35 00—4 mos | |
| " No. 2, " ..... 32 00@33 00—4 mos | |
| " Mill ..... 29 00@30 00—4 mos | |
| Tennessee No 1, Foundry..... 33 00@34 00—4 mos | |
| Tennessee. No. 2 " ..... 31 00@32 00—4 mos | |
| " Mill..... 29 00@30 00—4 mos | |
| Missouri, No. 1, Foundry..... 34 00@35 00—4 mos | |

STONE COAL.

| | |
|---|---|
| Ohio No. 1, Foundry..... 33 00@34 00—4 mos | |
| " No. 2, " ..... 31 00@32 00—4 mos | |
| Ohio Mill..... 28 00@29 00—4 mos | |
| Missouri, No. 1, Foundry..... 33 00@34 00—4 mos | |
| " No. 2, " ..... 31 00@32 00—4 mos | |
| " Mill..... 28 00@29 00—4 mos | |

CAR-WHEEL.

| | | | |
|---|---|---|---|
| Hanging Rock, C. B. | 55 00@58 00 | —4 mos |
| Tennessee " | 50 00@55 00 | —4 mos |
| Missouri " | 50 00@55 00 | —4 mos |
| Alabama " | 50 00@55 00 | —4 mos |

BLOOMS.

| | | |
|---|---|---|
| Charcoal | 85 00@ 95 00 | —cash |

SCRAP IRON.

| | | |
|---|---|---|
| Cast | — 80@ 1 00 | —cash |
| Wrought | 1 25@ 1 50 | —cash |

**Detroit.**

June 9, 1874.

| | | |
|---|---|---|
| Scotch pig, net | $44 00@ .... | |
| Lake Superior pig, No. 1 | 44 00@ .... | |
| " " No. 2 | 43 00@ .... | |

**Indianapolis, Ind.**

June 6, 1874.

Reported by our Special Correspondent.

While business seems to be very active here, there is a general stagnation over the country; sales are confined to small lots for present use only, and prices may be considered nominal.

| | | | |
|---|---|---|---|
| No. 1 Foundry, L. S. and I. M. ores | $36 00@37 00 | —4 mos |
| No. 2 " " " " | 34 00@35 00 | —4 mos |
| No. 1 Forge " " " | 27 00@28 00 | —4 mos |
| Old Rails | 34 00@36 00 | |
| New Rails | 64 00@66 00 | |
| 1st quality Merchant Bar, card rates | 57 00@ .... | —3 mos |
| 2d " " " | 55 00@ .... | —3 mos |
| 1st " C. H. No. 1 Boiler Plate, per lb | 6½c. | —3 mos |
| 1st " Com Sheet, for $24, W.G. " | 4¾c. | —3 mos |
| 1st " Charcoal Sheet " " " | 6 c. | —3 mos |
| 1st " Best Bloom Galvanized Sheet, discount 22½ per cent | | —cash |

f. o. b. in Indianapolis.

**Louisville.**

June 9, 1874.

Specially reported by GEORGE H. HULL, Esq.

The market is dull and lower for nearly all grades. Large sales can only be effected by making some concessions, the legitimate demand being confined to small lots for immediate use.

The usual time, 4 mos, is allowed on the quotations below:

HOT BLAST—CHARCOAL.

| | | |
|---|---|---|
| No. 1 foundry, from Hanging Rock ores | $34 00@36 00 |
| No. 2 " " " | 30 00@32 00 |
| No. 1, forge, " " | 27 00@28 00 |
| No. 1, foundry, " Tennessee " | 32 00@34 00 |
| No. 2 " " " | 28 00@30 00 |
| No. 1, forge, " " | 27 00@28 00 |
| No. 1, foundry, " Alabama " | 32 00@34 00 |
| No. 1. " " Iron Mountain " | 34 00@36 00 |

HOT BLAST—STONECOAL.

| | | |
|---|---|---|
| No. 1, foundry, from Missouri ores | 33 00@34 00 |
| No. 2, " " " | 28 00@30 00 |
| No. 1, forge " " | 27 00@28 00 |

COLD BLAST—CHARCOAL.

| | | |
|---|---|---|
| Car Wheel from Hanging Rock ores | 50 00@54 00 |
| " " Tennessee " | 48 00@50 00 |
| " " Alabama " | 50 00@52 00 |
| " " Georgia " | 50 00@52 00 |
| " " Missouri " | 48 00@50 00 |
| " " Kentucky " | 50 00@52 00 |

**Pittsburgh.**

June 9, 1874.

Specially reported by A. H. CHILDS, Esq., commission merchant for the sale of pig iron, blooms, ore, &c.:

The metal market remains quiet, and purchases are being made chiefly for immediate wants. There is also some speculative inquiry, and large sales could be effected by a slight concession. Holders generally, however, seem disinclined to sell ahead to any extent, having confidence that the decreasing production resulting from furnaces now going out of blast, will shortly exert a favorable influence on prices.

| | | | |
|---|---|---|---|
| No. 1 Foundry, anthracite or bituminous | $30 00@31 00 | —4 mos |
| No. 2, " " " | 28 00@29 00 | —4 mos |
| Gray forge " " | 27 00@27 50 | —4 mos |
| White and mottled " | 24 00@26 00 | —4 mos |

The Pittsburgh *Commercial* reports the following sales for week ending May 29:

IRON MADE FROM LAKE SUPERIOR ORES, SMELTED BY BITUMINOUS COAL.

| | | | |
|---|---|---|---|
| 800 tons gray forge | private terms. |
| 500 " " " | $27 00 | —4 mos |
| 400 " " " | 26 50 | —4 mos |
| 300 " " " | 27 00 | —4 mos |
| 200 " " " | 26 00 | —4 mos |
| 200 " " extra | 28 00 | —4 mos |
| 150 " " " | 27 00 | —6 mos |
| 100 " " " | 27 00 | —4 mos |
| 100 " " " | 27 00 | —4 mos |
| 100 " " " | 26 00 | — cash |
| 100 " white and mottled | 26 00 | —4 mos |
| 60 " foundry | 30 00 | —4 mos |
| 50 " " | 30 00 | —4 mos |
| 50 " white and mottled, neutral | 25 00 | —4 mos |
| 20 " cold short | 25 00 | —4 mos |
| 20 " No. 1 foundry | 30 00 | —4 mos |
| 20 " " " | 28 00 | — cash. |
| 10 " " " | 30 00 | —4 mos |

CONNELSVILLE COKE.

| | | | |
|---|---|---|---|
| 100 " gray forge, neutral | 27 00 | —4 mos |
| 50 " " " " | 27 00 | — cash. |

ANTHRACITE.

| | | | |
|---|---|---|---|
| 100 " No. 1 Foundry | 30 25 | —4 mos |
| 30 " " " | 31 00 | —4 mos |

**St. Louis, Mo.**

June 6, 1874.

STONE COAL PIG.

| | |
|---|---|
| No. 1 foundry from Iron Mountain and Maramac ores, | $32@34 |
| No. 2 foundry from Iron Mountain and Maramac ores, | 30@32 |
| No. 3 forge from Iron Mountain and Maramac ores, | 27@29 |
| No. 1 Massilon, | 39@41 |
| No. 1 Tennessee, cold short, | 36@.. |
| No. 1 Ohio, cold short, | 40@.. |

HOT BLAST CHARCOAL PIG.

| | |
|---|---|
| No. 1 foundry from Iron Mountain and Maramac ores, | 35@37 |
| No. 2 foundry from Iron Mountain and Maramac ores, | 33@36 |
| No. 1 foundry from Tennessee ores, | 33@35 |
| No. 1 forge from Tennessee ores, | 31@33 |

COLD BLAST CHARCOAL PIG.

| | |
|---|---|
| Hanging Rock car wheel, | 56@58 |
| Tennessee, | 48@50 |

MISSOURI IRON ORES.

| | |
|---|---|
| Iron Mountain, per ton | $8 00 |
| Benton Creek, " | 7 00 |
| Surface ores, " | 8 00 |
| Red and brown hematites, per ton | 5 00@6 50 |
| Pilot Knob, per ton | 5 00 |
| Rails, 50 to 60 lb. inclusive | 66 00@68 00 |

## METALS.

NEW YORK, June 12, 1874.

***Gold Coin.***—During the week past gold has ranged from 111⅝ to 110½, and closed yesterday at 111.

***Bullion.***—Fine silver bar is quoted at $1 28½@1 29¼, gold, per ounce, and fine gold bar at par ($20 67, gold, per ounce).

***Copper.***—During the past week, the sales have amounted to about 1,000,000 lb. Since our last, the parties holding nearly the whole stock have purchased the balance of the mining companies' product, at prices considerable below the quotations of to-day, which has given much firmness to the market, and Baltimore is quoted at 24¼c., and Lake at 24¾c. The latest London quotations were: Chili bars, £79, and best selected, £88; or an advance of £6 since May 30. Consumers are buying in small quantities to meet their immediate wants.

***Tin.***—The market is very quiet. Straits is quoted at 23½@24c.; English Refined, at 22c.; English L. and F., at 21c.; and Banca, at 26¼c, all gold. There has been an advance in the London market, the latest cable information quoting Straits at £103. Messrs. WHITE & HASKELL, in their circular dated the 4th inst., give the stock in the hands of New York and Boston importers and speculators as follows: Straits, 740 tons; English and L. and F., 100 tons; total, 840 tons, as compared with 440 tons on the same date in 1873, 125 tons in 1872, 268 tons in 1871, and 60 tons in 1870. There is a fair jobbing business doing in tin plates, and prices remain without material change. The lock-out at the tin plate works continues, with no indications of an early adjustment of the difficulties.

***Lead.***—Sales have been made pretty freely during the past week at $5 75, but the stock is becoming concentrated, with no prospect of much bullion to arrive. At the close prices are firmer, 6c. being very generally asked.

***Spelter.***—The market is very quiet. Domestic is quoted at 7@7¼c., currency, and foreign, tc arrive, 6½@6¾c., gold.

***Zinc.***—The market is very dull. Silesian and M sselman sheets are quoted at 8¼c @8¾c., gold, and Domestic at 8½c.@8¼c., gold.

***Antimony.***—There is comparatively nothing doing, and we quote as last week, at 12½c., gold,

***Manganese.***—The quotations are: Manganite, Ga. and Va., 3c.; N. B., 3½c.; Pyrolusite, N.B., 85 per cent., 5c, and German Manganite, 6½c.

***Quicksilver.***—The demand in all parts of the world appears to be ahead of the supply. In San Francisco, the quotation is $1 35 per lb., gold; in this city, $1 42; and in London, £19 15/.

**San Francisco Stock Market.**

BY TELEGRAPH.

NEW YORK, June 11, 1874.

We have advices from the San Francisco Stock Board dated the 9th inst. The market is irregular, with the tendency slightly downward. A dividend of $5 per share has been declared by the Belcher Mining Co., payable on the 10th inst. The report is as follows:

| | | | |
|---|---|---|---|
| Savage | 79 | Imperial | 4½ |
| Crown Point | 81½ | Raymond & Ely | 23¾ |
| Yellow Jacket | 71½ | Meadow Valley | 9½ |
| Centuck | 13⅞ | Eureka C. G. Bid | 9 |
| Chollar Potosi | 64¼ | Ophir | — |
| Gould & Curry | 10½ | Hale & Norcross | — |
| Belcher | 82¾ | | |

**Boston Stock Market.**

BOSTON, June 11, 1874.

The following are the prices bid for copper stocks at the first session of the Boston Stock Board:

| | | | |
|---|---|---|---|
| Allouez | 7¾ | Pewabic | 8 |
| Calumet and Hecla Co. | 131 | Phœnix | 14 |
| Copper Falls | 18 | Quincy | 36 |
| Central | — | Ridge | 5 |
| Franklin | 4 | Rockland | — |
| Mesnard | 1 | St. Clair | 1¾ |
| National | 3 | Star | — |
| Petherick | 1½ | | |

## American Institute of Mining Engineers.

OFFICIAL BULLETIN.

**Announcements to Members and Associates.**

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. The Council earnestly requests members to forward to the Secretary, for preservation, copies of all printed mining and geological reports, particularly pamphlets, which may fall in their way. It is believed that by this means a large amount of valuable fugitive information concerning different regions and properties in this country, may be caught and preserved.

THOMAS M. DROWN, Secretary, 1123 Girard street, Philadelphia, Pa.

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In order to make the reduction clearly apparent I have, in the following, placed my terms close to the charges of the celebrated agency of MUNN & Co., as I find them published in their last "European Pamphlet."

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|---|---|---|
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| " England | 250 | 300 |
| " France | 90 | 100 |
| " Prussia | 60 | 100 |
| " Italy | 100 | 200 |
| " Austria | 100 | 150 |
| " Saxony | 75 | 100 |
| " Spain | 400 | 550 |
| " Wurtemberg | 75 | 100 |
| " Russia | 250 | 300 |

The above are gold prices, or their equivalents in U. S. Currency. Very respectfully, **A. V. BRIESEN,**

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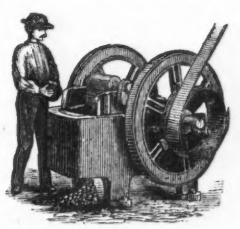
### Blake's Patent Stone and Ore Breaker.

NEW PATTERN.  WITH IMPORTANT Improvements.

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☞ Reference to them is requested. may3-1y

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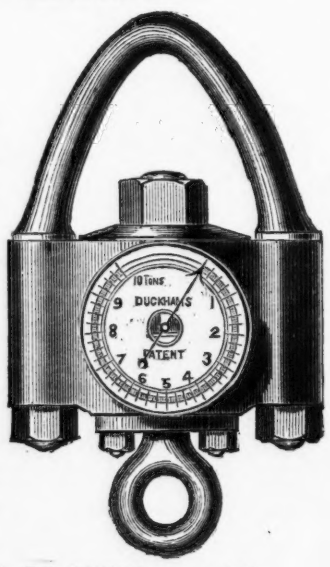


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